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DRAFT FINAL

Phase III RFI/RI Report

Rocky Flats Plant
881 Hillside Area
(Operable Unit No. 1)

Volume II

Remedial Investigation (Continued)

U.S. Department of Energy
Rocky Flats Plant
Golden, Colorado

October 1992

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REVIEWED FOR CLASSIFICATION/UCNI
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ADMIN RECORD

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A2 GEOTECHNICAL DATA
A3 SURVEYING DATA
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B HYDROGEOLOGIC DATA

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C5 GROUND WATER
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D QUALITY ASSURANCE

VOLUME XIII

E ENVIRONMENTAL EVALUATION

VOLUME XIV

F PUBLIC HEALTH EVALUATION

LIST OF ACRONYMS AND ABBREVIATIONS

ARARs	applicable or relevant and appropriate requirements
ASTM	American Society for Testing and Materials
BNA	base neutral acid extractable
CDH	State of Colorado Department of Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	centimeter
cm/sec	centimeters per second
DNAPL	dense nonaqueous phase liquid
DOE	Department of Energy
EPA	Environmental Protection Agency
ft^2/min	square feet per minute
FS	feasibility study
GRRASP	General Radiochemistry and Routine Analytical Services Protocol
HQ	Hazard Quotient
HSU	hydrostratigraphic unit
I.D.	inside diameter
IHSS	Individual Hazardous Substance Site
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
mm Hg	millimeters of mercury
O.D.	outside diameter
OU1	Operable Unit No. 1
OU2	Operable Unit No. 2
OU5	Operable Unit No. 5
OU10	Operable Unit No. 10
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pCi/l	picocuries per liter
pCi/m^3	picocuries per cubic meter
pCi/ml	picocuries per milliliter
QA/QC	quality assurance/quality control
QAA	Quality Assurance Addendum
QAPjP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RFP	Rocky Flats Plant
RI	remedial investigation
SOP	Standard Operating Procedure
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit

LIST OF ACRONYMS AND ABBREVIATIONS
(continued)

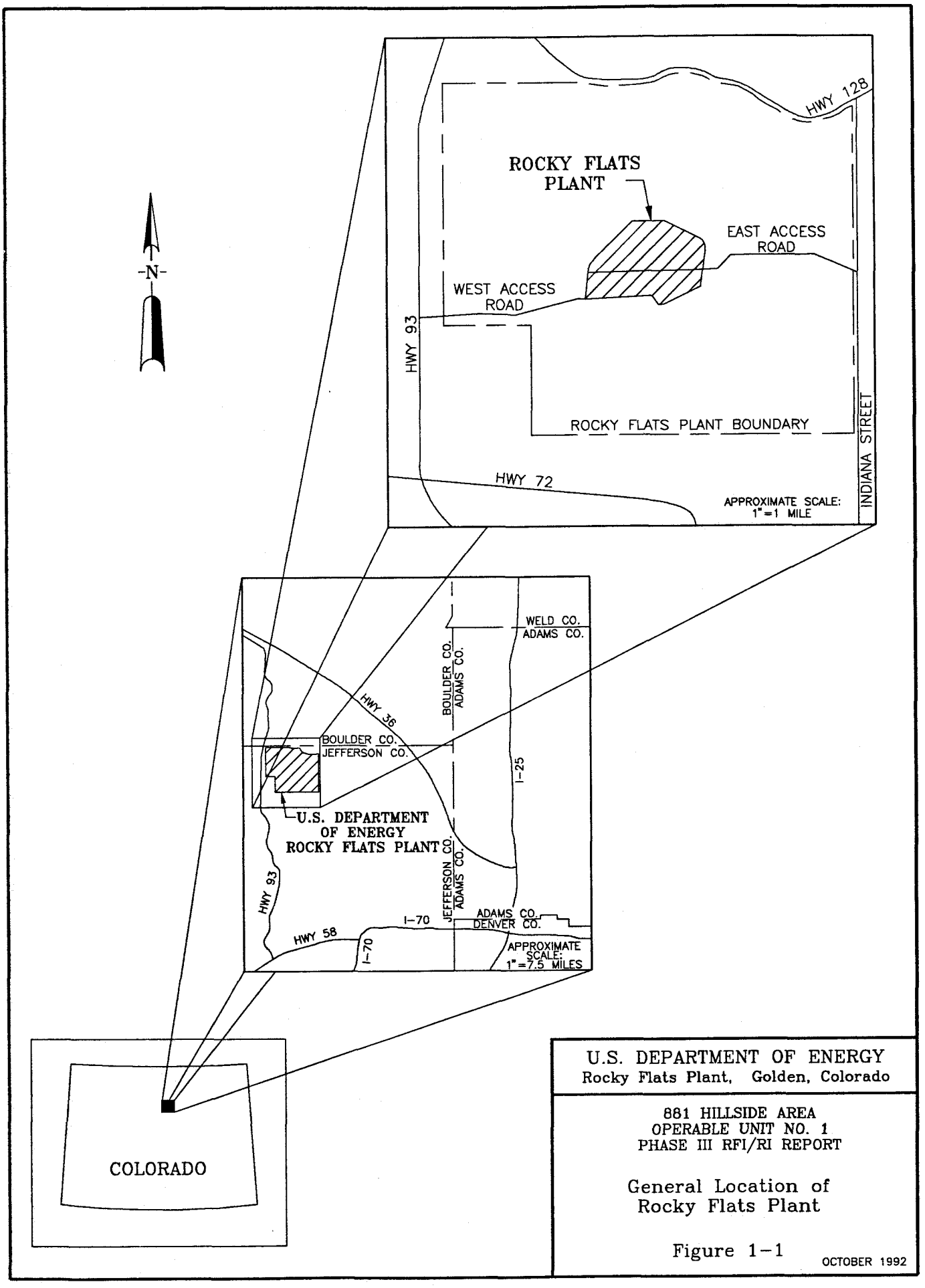
TCL	Target Compound List
TOC	total organic carbon
VOC	volatile organic compound
µg/kg	micrograms per kilogram
µg/l	micrograms per liter

Section 1.0 · Figures

Introduction

Phase III
RFI/RI Report

U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881
1 OU1 OU1
side 881 Hill
U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881



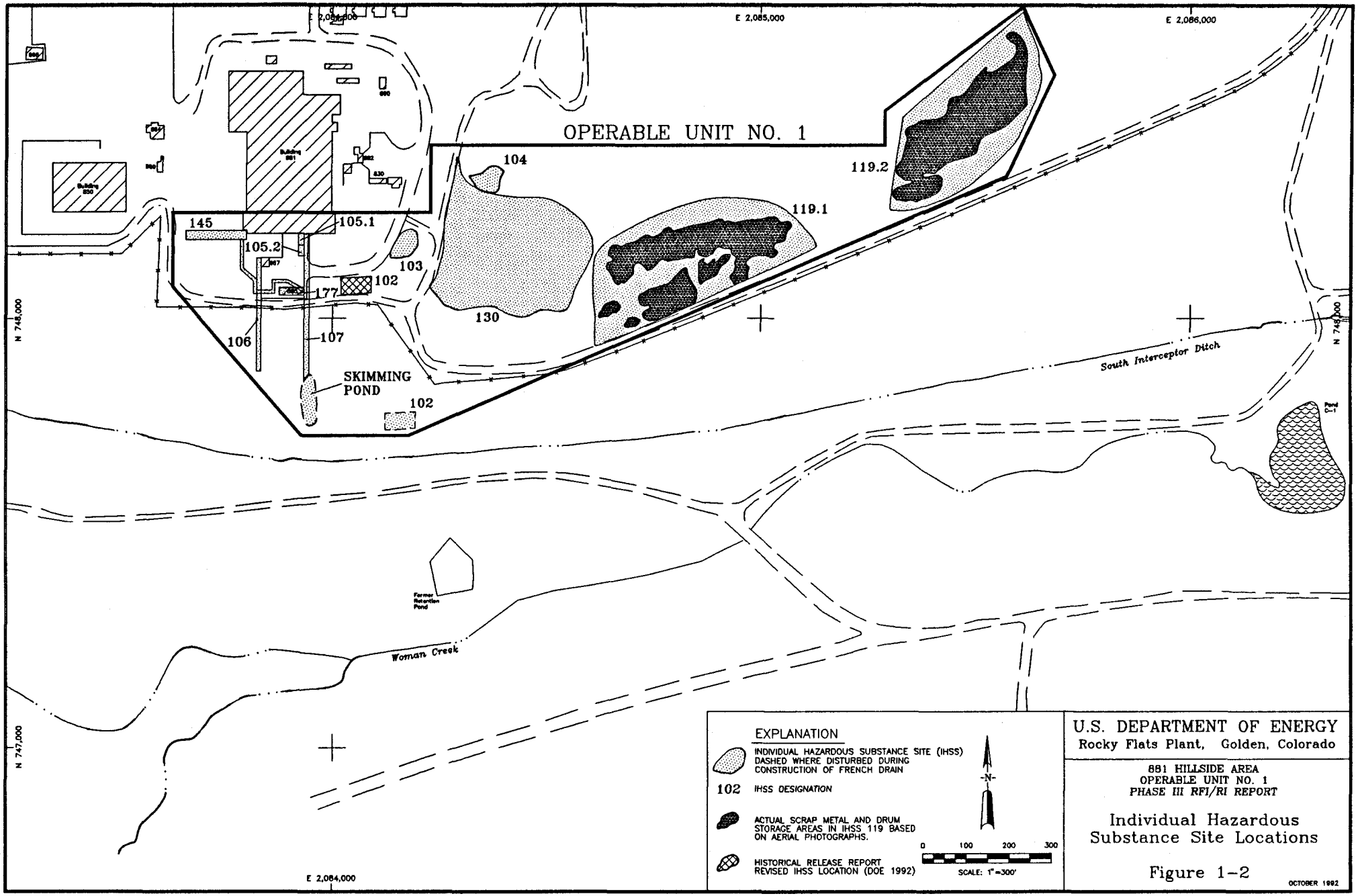
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

General Location of Rocky Flats Plant

Figure 1-1

OCTOBER 1992



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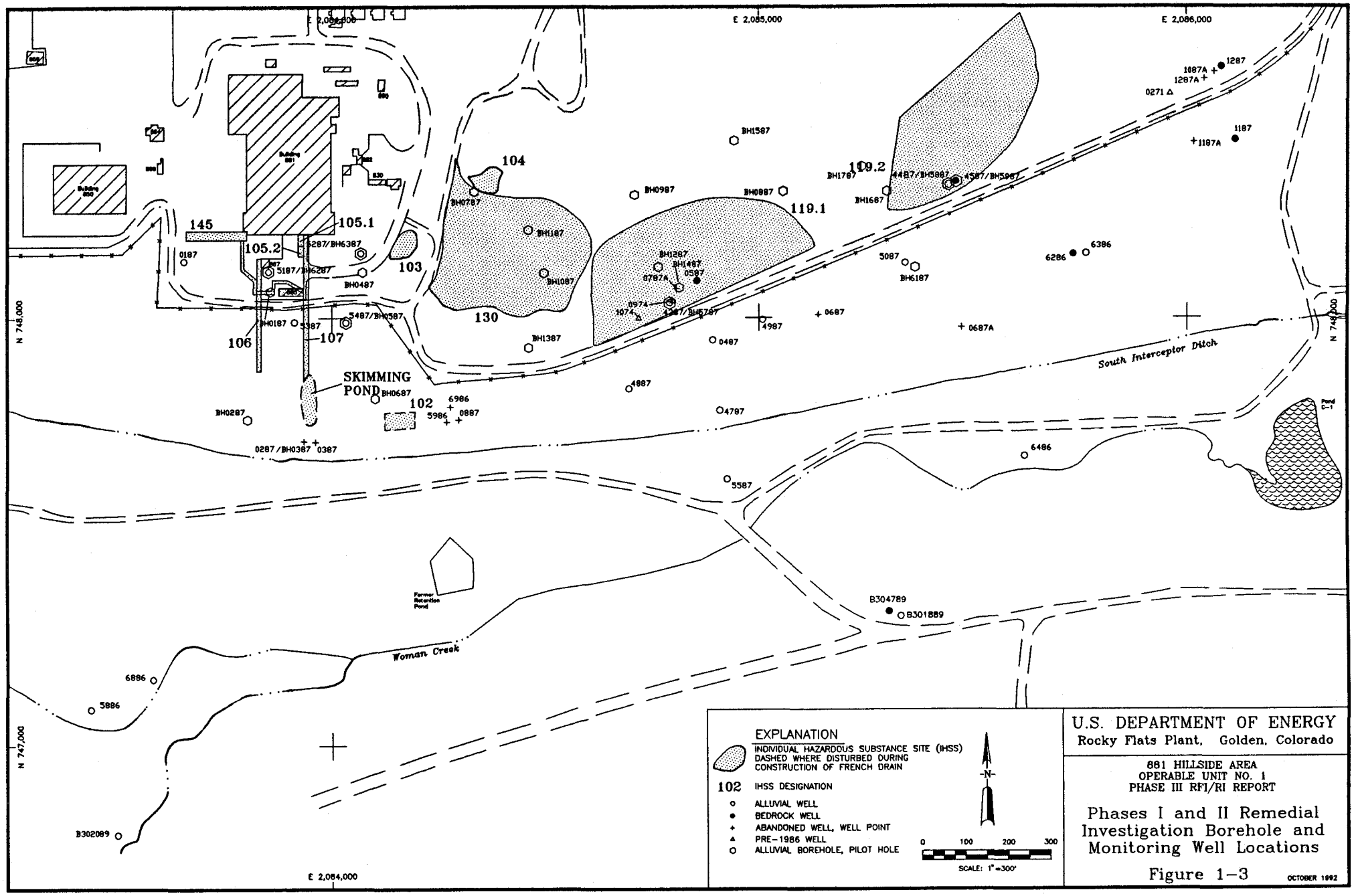
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Individual Hazardous Substance Site Locations

Figure 1-2

OCTOBER 1992



EXPLANATION

INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN

102 IHSS DESIGNATION

- ALLUVIAL WELL
- BEDROCK WELL
- ABANDONED WELL, WELL POINT
- PRE-1986 WELL
- ALLUVIAL BOREHOLE, PILOT HOLE

N

0 100 200 300

SCALE: 1" = 300'

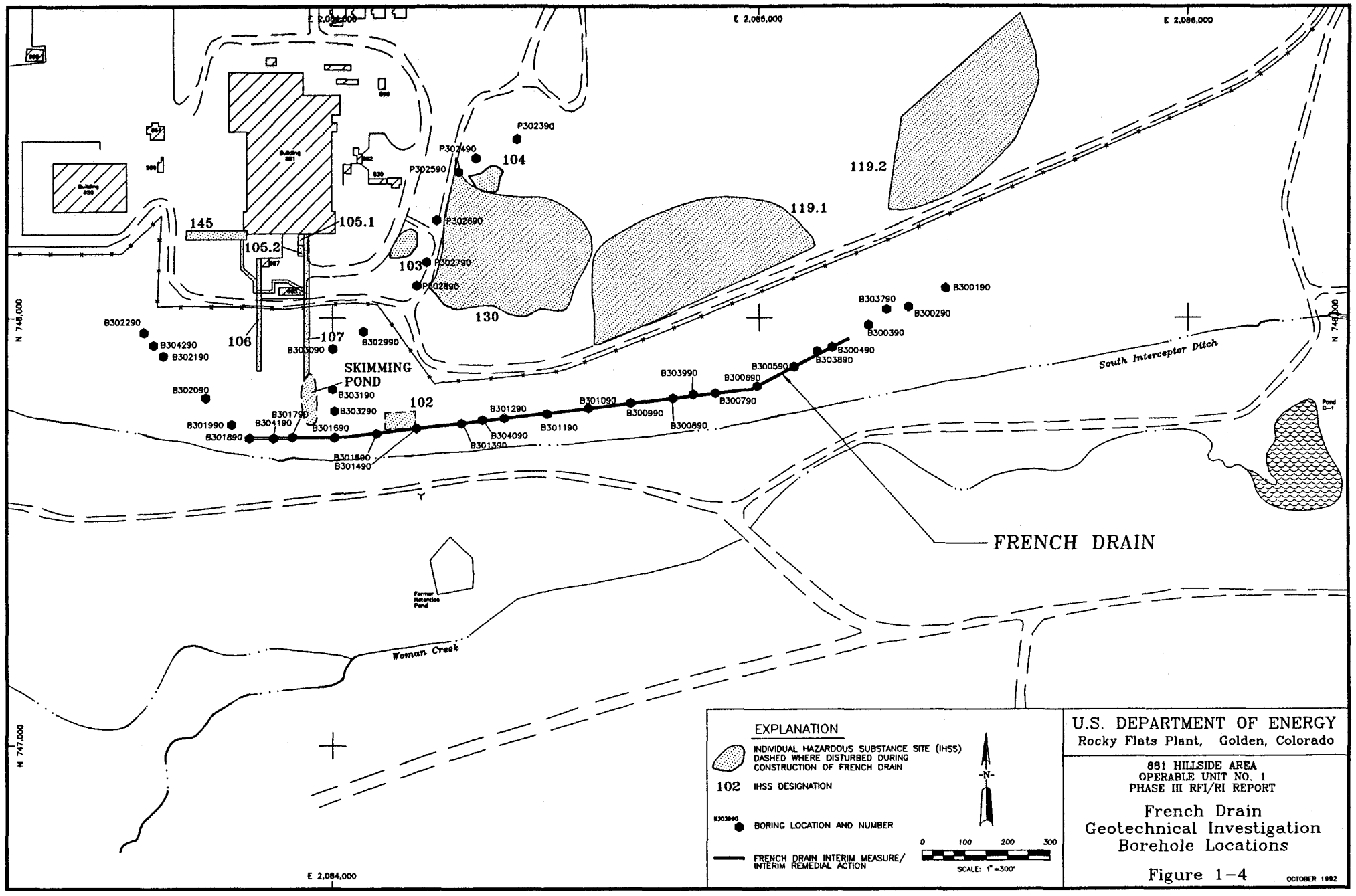
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Phases I and II Remedial Investigation Borehole and Monitoring Well Locations

Figure 1-3

OCTOBER 1992



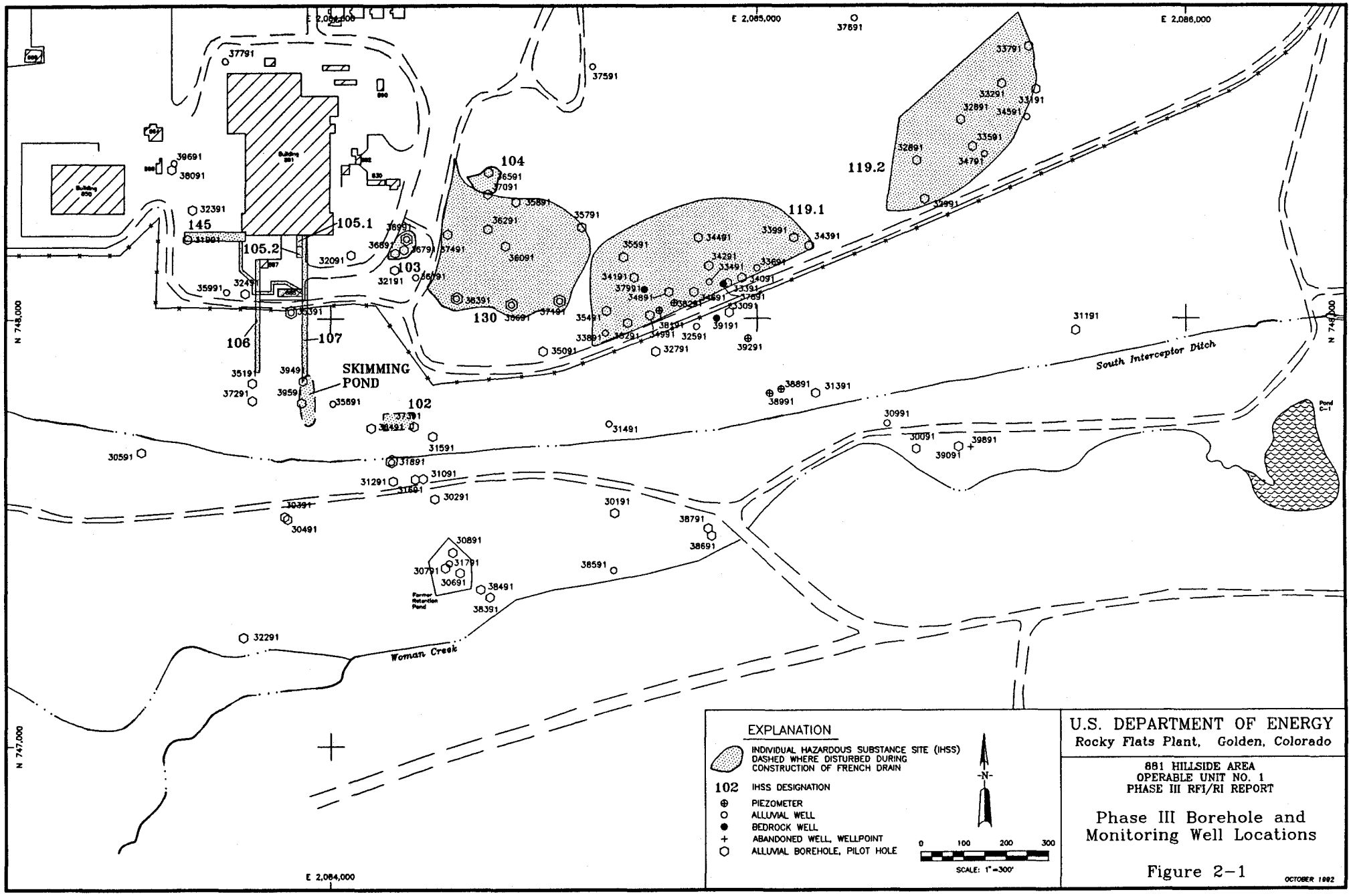
E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
145
105.1
105.2
106
107
103
104
130
119.1
119.2
102
SKIMMING POND
FRENCH DRAIN
South Interceptor Ditch
Woman Creek
Former Retention Pond
P302390
P302490
P302590
P302690
P302790
P302890
B302290
B304290
B302190
B302090
B302990
B303090
B303190
B303290
B301990
B301890
B301790
B304190
B301690
B301590
B301490
B301290
B304090
B301390
B301190
B301090
B300990
B300890
B303990
B300790
B300690
B300590
B300490
B303890
B300390
B303790
B300290
B300190
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
BORING LOCATION AND NUMBER
FRENCH DRAIN INTERIM MEASURE/ INTERIM REMEDIAL ACTION
-N-
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
French Drain
Geotechnical Investigation
Borehole Locations
Figure 1-4
OCTOBER 1992

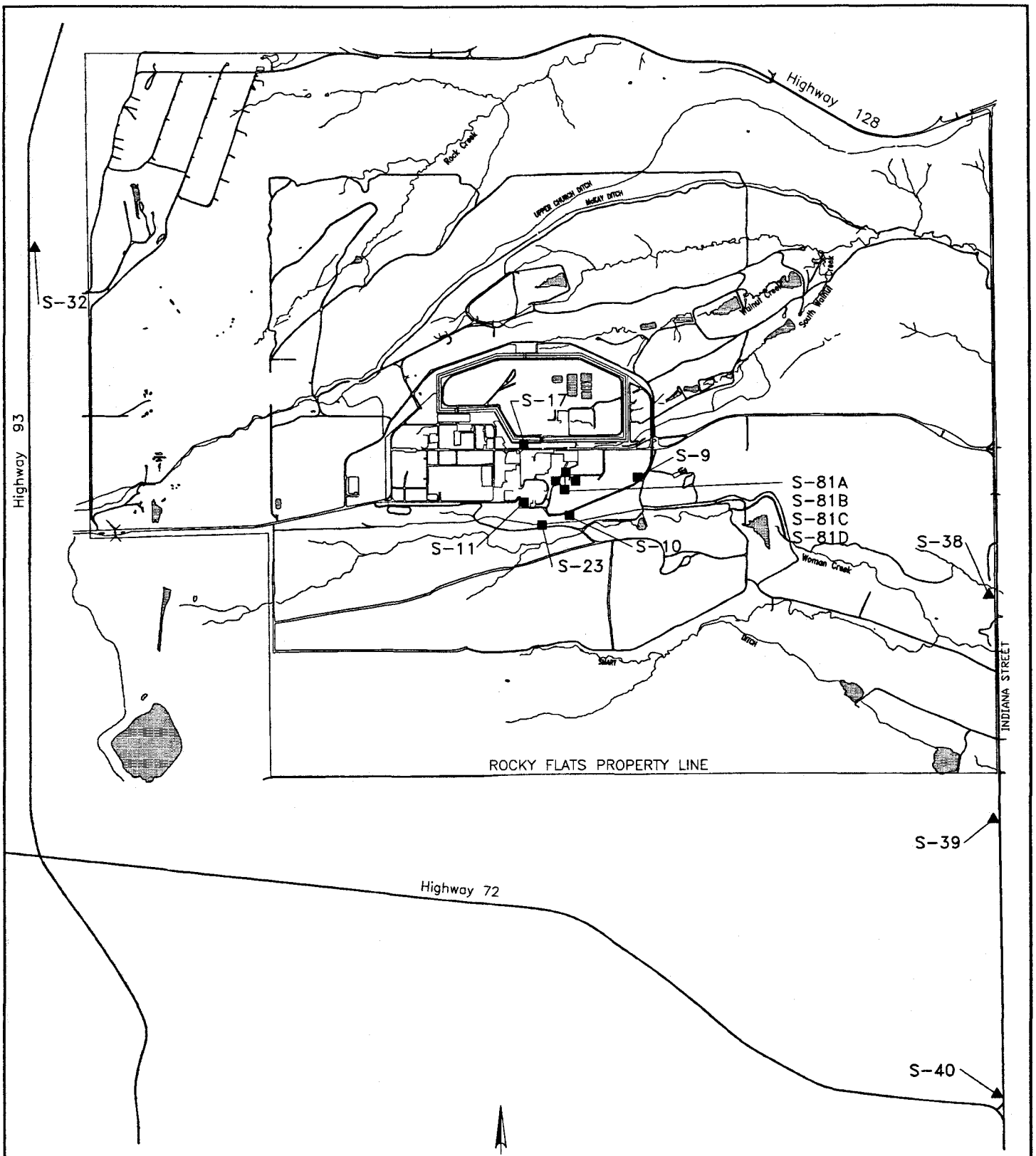
Section 2.0 · Figures

OU1 Field Investigation

Phase III
RFI/RI Report

U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881
1 OU1 OU1
side 881 Hill
U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
SKIMMING POND
South Interceptor Ditch
Woman Creek
Former Retention Pond
Pond C-1
104
103
102
105.1
105.2
106
107
130
145
119.1
119.2
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ABANDONED WELL, WELLPOINT
ALLUVIAL BOREHOLE, PILOT HOLE
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Phase III Borehole and Monitoring Well Locations
Figure 2-1
OCTOBER 1992



EXPLANATION

▲ S-32 PERIMETER SAMPLERS

■ S-10 ON-SITE SAMPLERS

-N-

0 1000 2000 3000

SCALE IN FEET

U.S. DEPARTMENT OF ENERGY

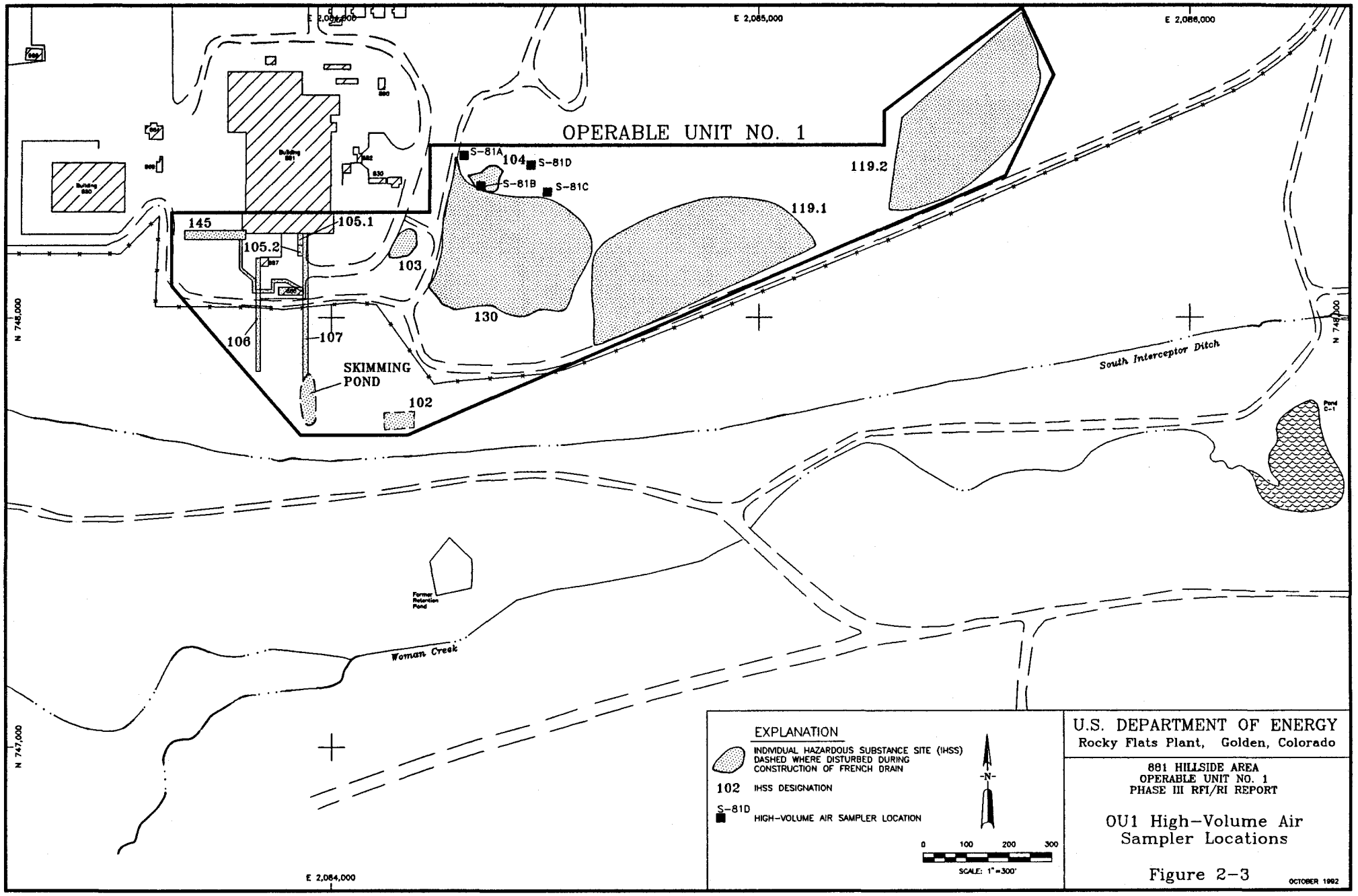
Rocky Flats Plant Golden, Colorado

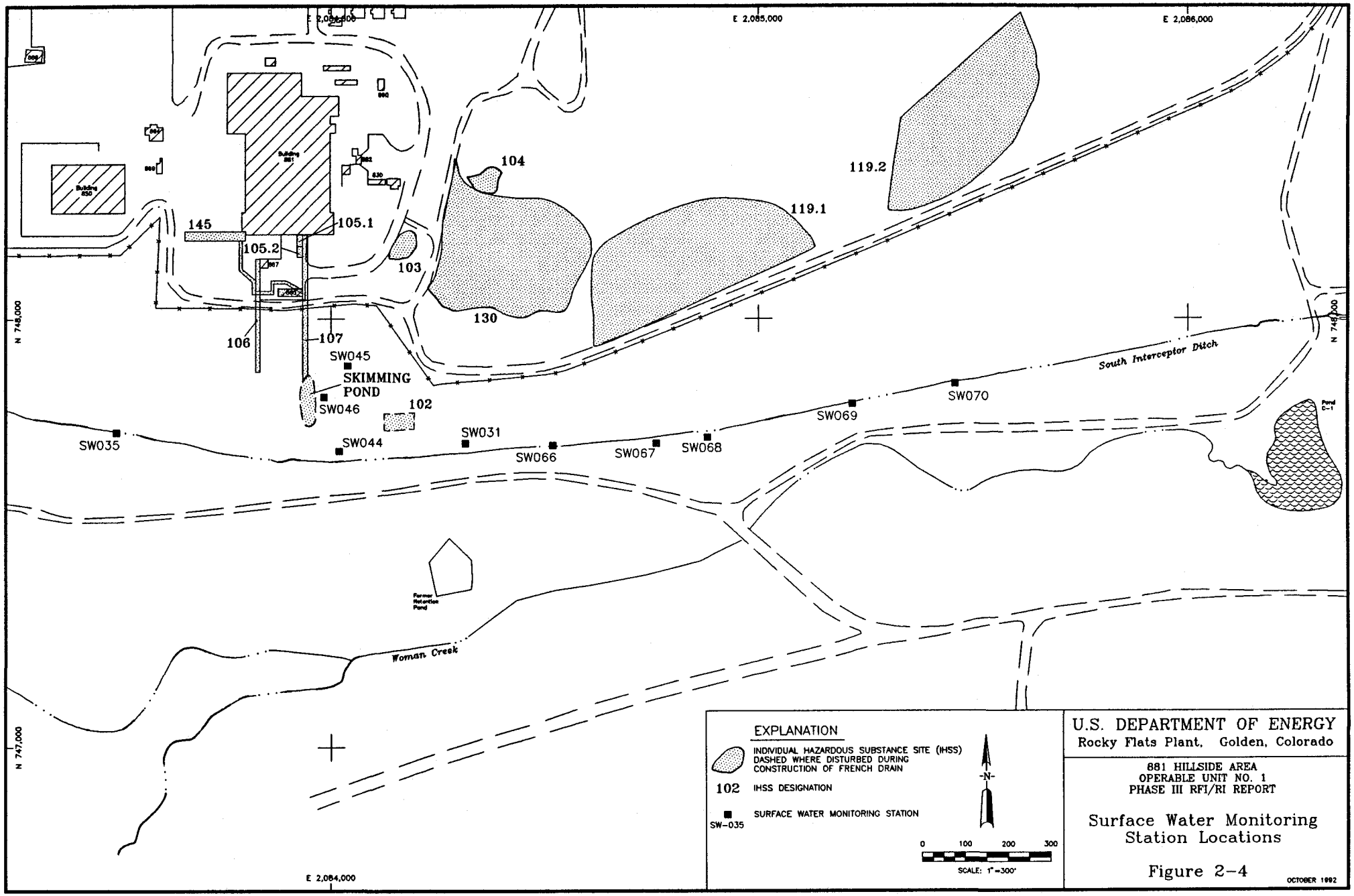
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

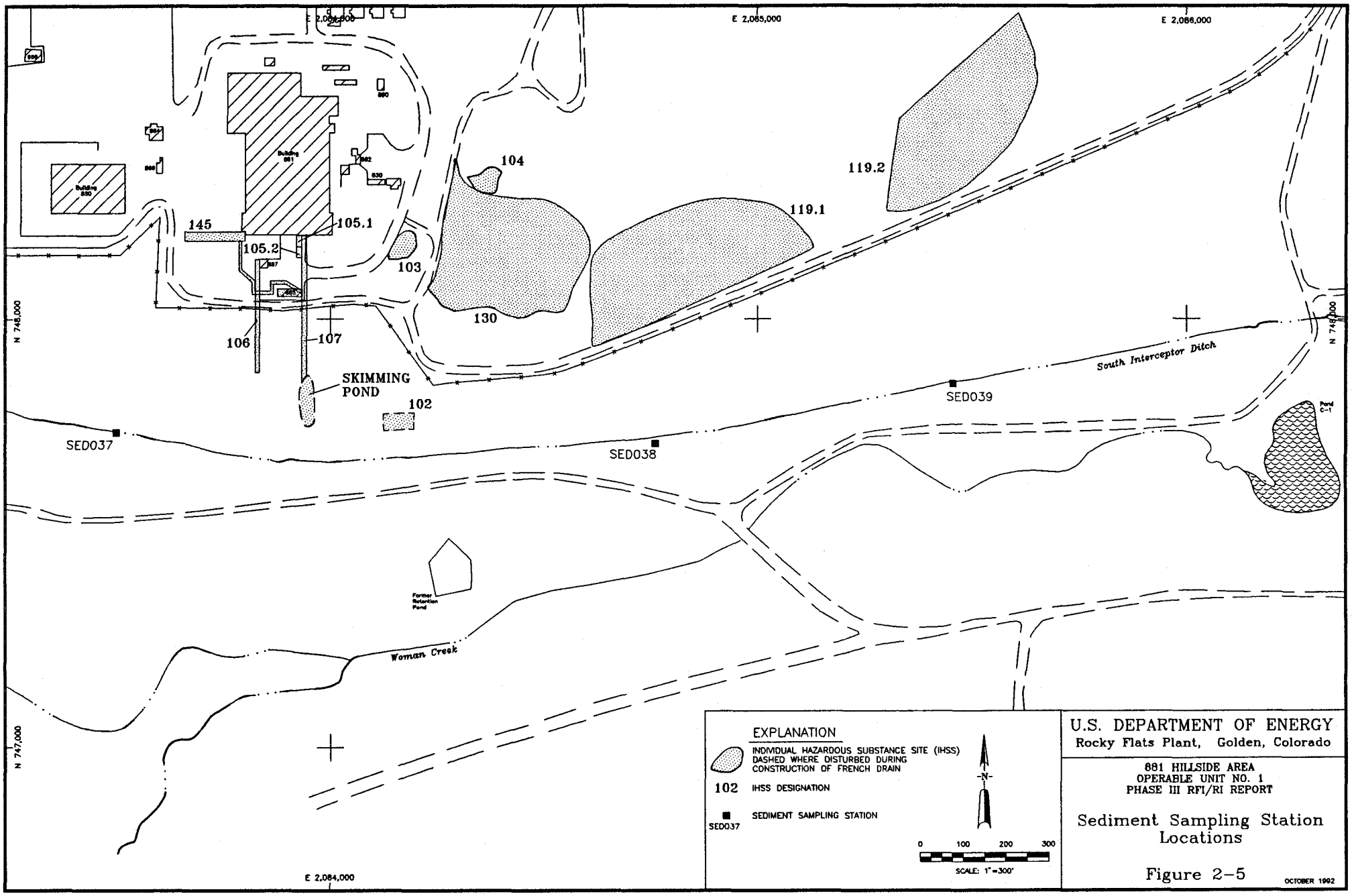
Location of On-Site and Plant Perimeter Ambient Air Samplers

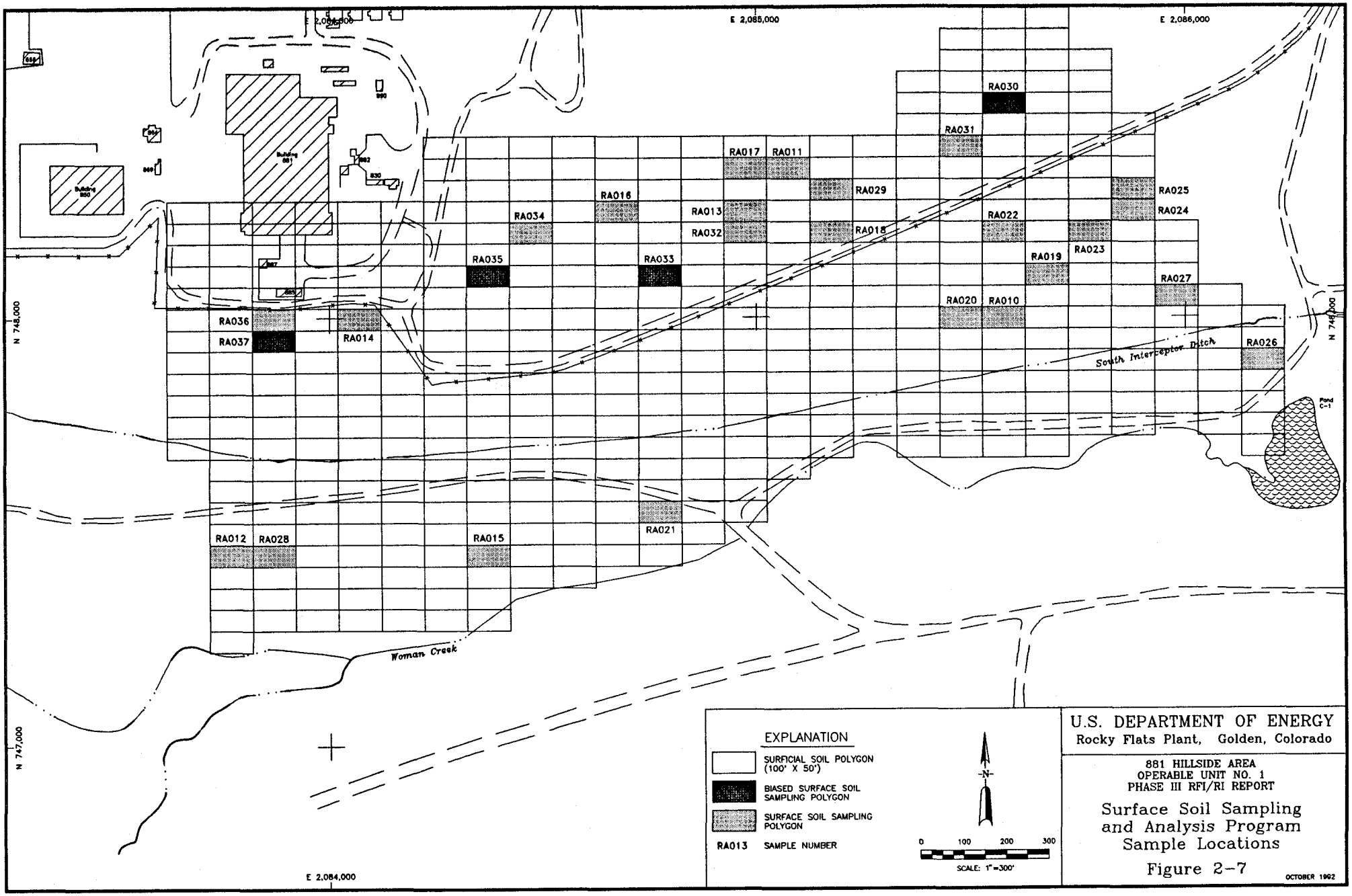
Figure 2-2

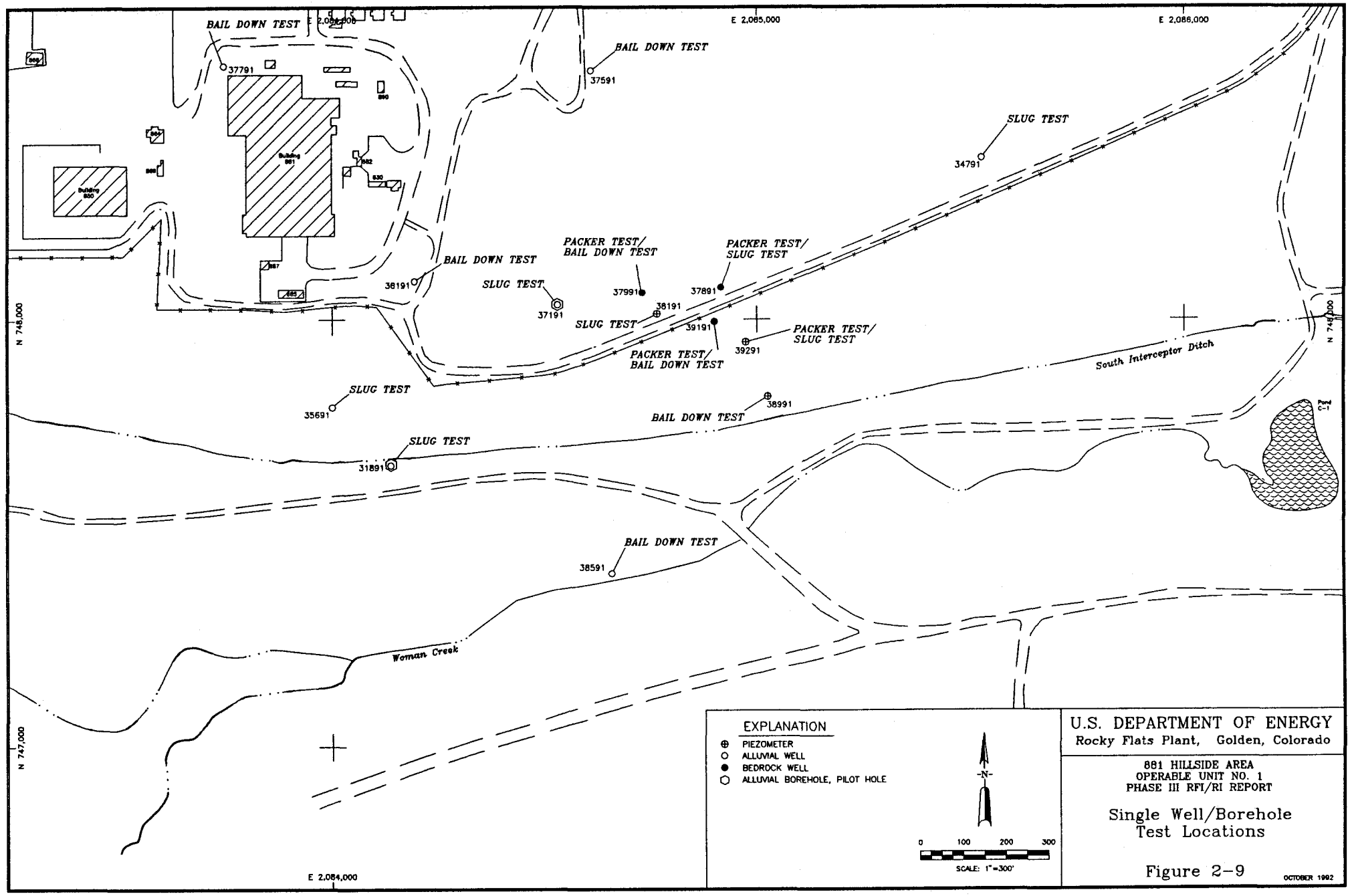
OCTOBER 1992

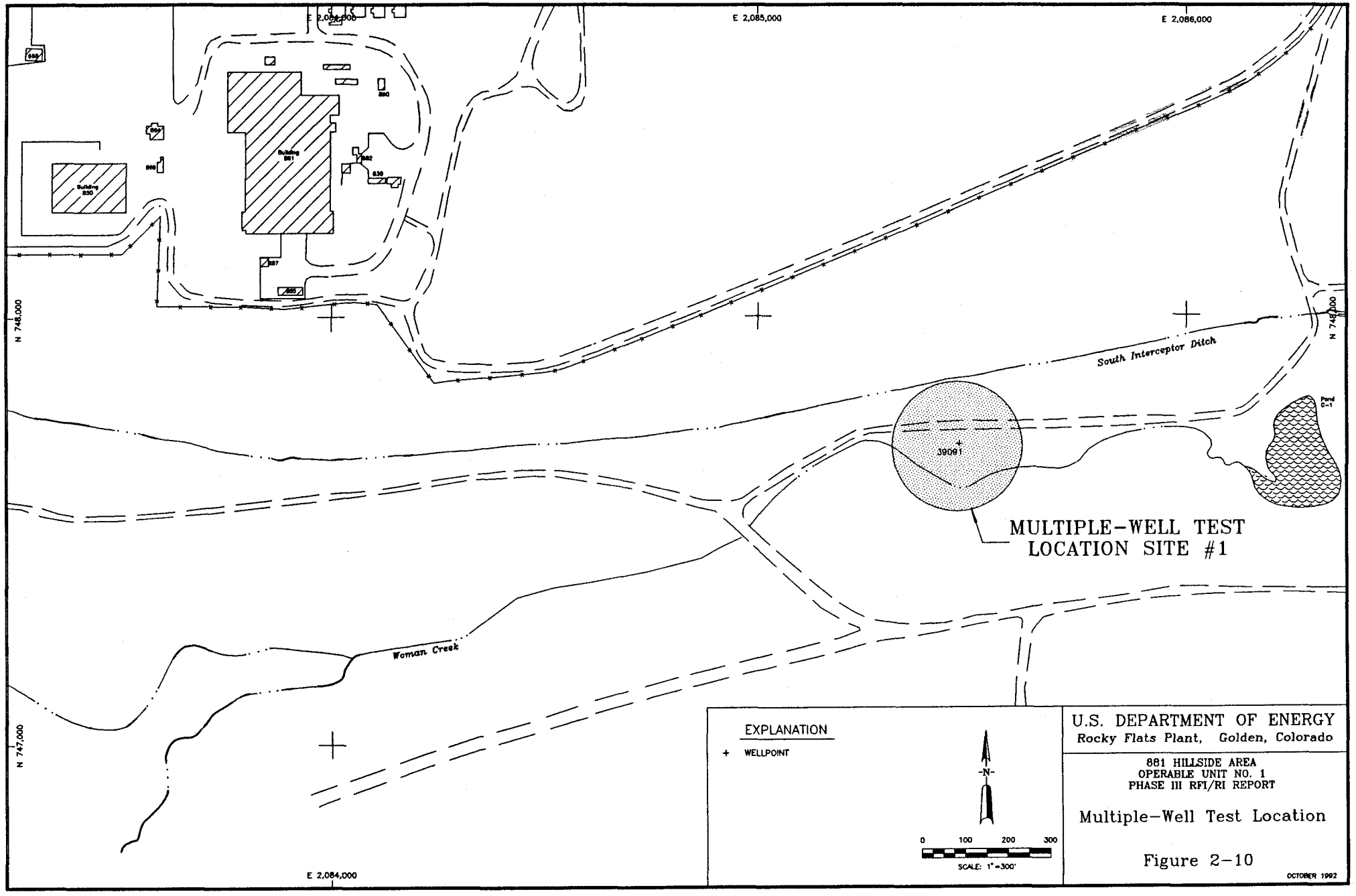

OPERABLE UNIT NO. 1
E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
S-81A
104
S-81D
S-81B
S-81C
119.2
119.1
145
105.1
105.2
103
130
106
107
SKIMMING POND
102
South Interceptor Ditch
Woman Creek
Former Retention Pond
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
S-81D HIGH-VOLUME AIR SAMPLER LOCATION
-N-
0 100 200 300
SCALE: 1" = 300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
OU1 High-Volume Air Sampler Locations
Figure 2-3
OCTOBER 1992

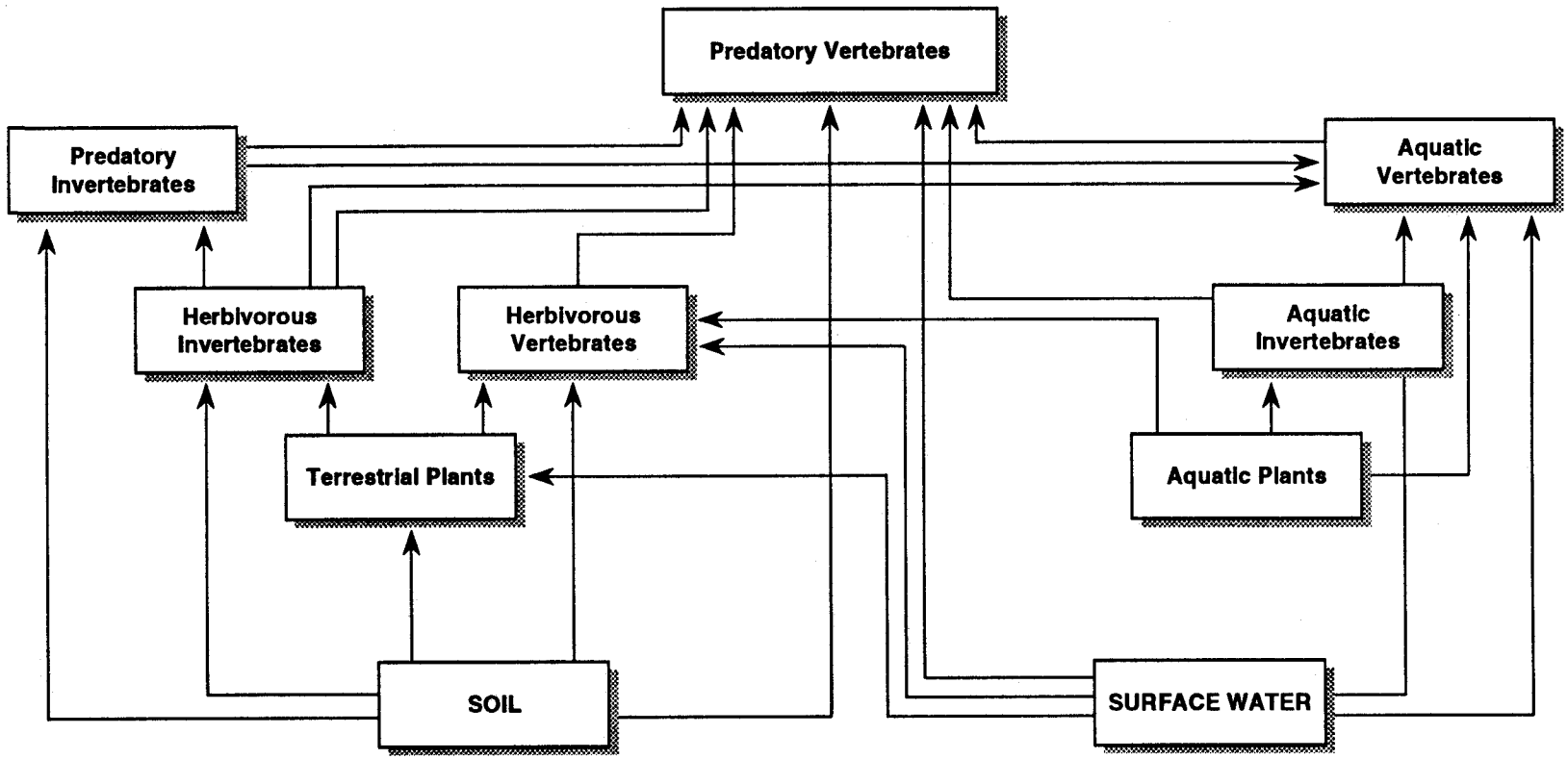

E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
Building 850
Building 881
145
105.1
105.2
103
104
130
119.1
119.2
106
107
SW045
SKIMMING POND
SW046
102
SW035
SW044
SW031
SW066
SW067
SW068
SW069
SW070
South Interceptor Ditch
Woman Creek
Former Retention Pond
Pond C-1
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
SW-035 SURFACE WATER MONITORING STATION
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Surface Water Monitoring Station Locations
Figure 2-4
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 830
145
105.1
105.2
106
107
103
104
130
119.1
119.2
SKIMMING POND
102
SED037
SED038
SED039
South Interceptor Ditch
Pond C-1
Former Retention Pond
Woman Creek
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
SED037 SEDIMENT SAMPLING STATION
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Sediment Sampling Station Locations
Figure 2-5
OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
Building 881
Building 850
RA030
RA031
RA017
RA011
RA029
RA016
RA013
RA032
RA034
RA018
RA022
RA025
RA024
RA023
RA019
RA035
RA033
RA027
RA020
RA010
RA036
RA037
RA014
RA026
South Interceptor Ditch
Pond C-1
RA021
RA012
RA028
RA015
Woman Creek
EXPLANATION
SURFICIAL SOIL POLYGON (100' X 50')
BIASED SURFACE SOIL SAMPLING POLYGON
SURFACE SOIL SAMPLING POLYGON
RA013 SAMPLE NUMBER
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Surface Soil Sampling and Analysis Program Sample Locations
Figure 2-7
OCTOBER 1992


BAIL DOWN TEST
37791
E 2,084,000
E 2,085,000
E 2,086,000
BAIL DOWN TEST
37591
SLUG TEST
34791
Building 881
Building 880
PACKER TEST/
BAIL DOWN TEST
PACKER TEST/
SLUG TEST
BAIL DOWN TEST
38191
SLUG TEST
37191
37991
38191
37891
SLUG TEST
39191
PACKER TEST/
SLUG TEST
39291
PACKER TEST/
BAIL DOWN TEST
South Interceptor Ditch
N 748,000
SLUG TEST
35691
BAIL DOWN TEST
38991
SLUG TEST
31891
Pond C-1
BAIL DOWN TEST
38591
Woman Creek
N 747,000
E 2,084,000
EXPLANATION
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Single Well/Borehole
Test Locations
Figure 2-9
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
South Interceptor Ditch
Woman Creek
Pond C-1
39091
MULTIPLE-WELL TEST LOCATION SITE #1
EXPLANATION
WELLPOINT
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Multiple-Well Test Location
Figure 2-10
OCTOBER 1992



U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Terrestrial and Associated Aquatic Ecosystem Food Web and Exposure Pathway

Figure 2-11

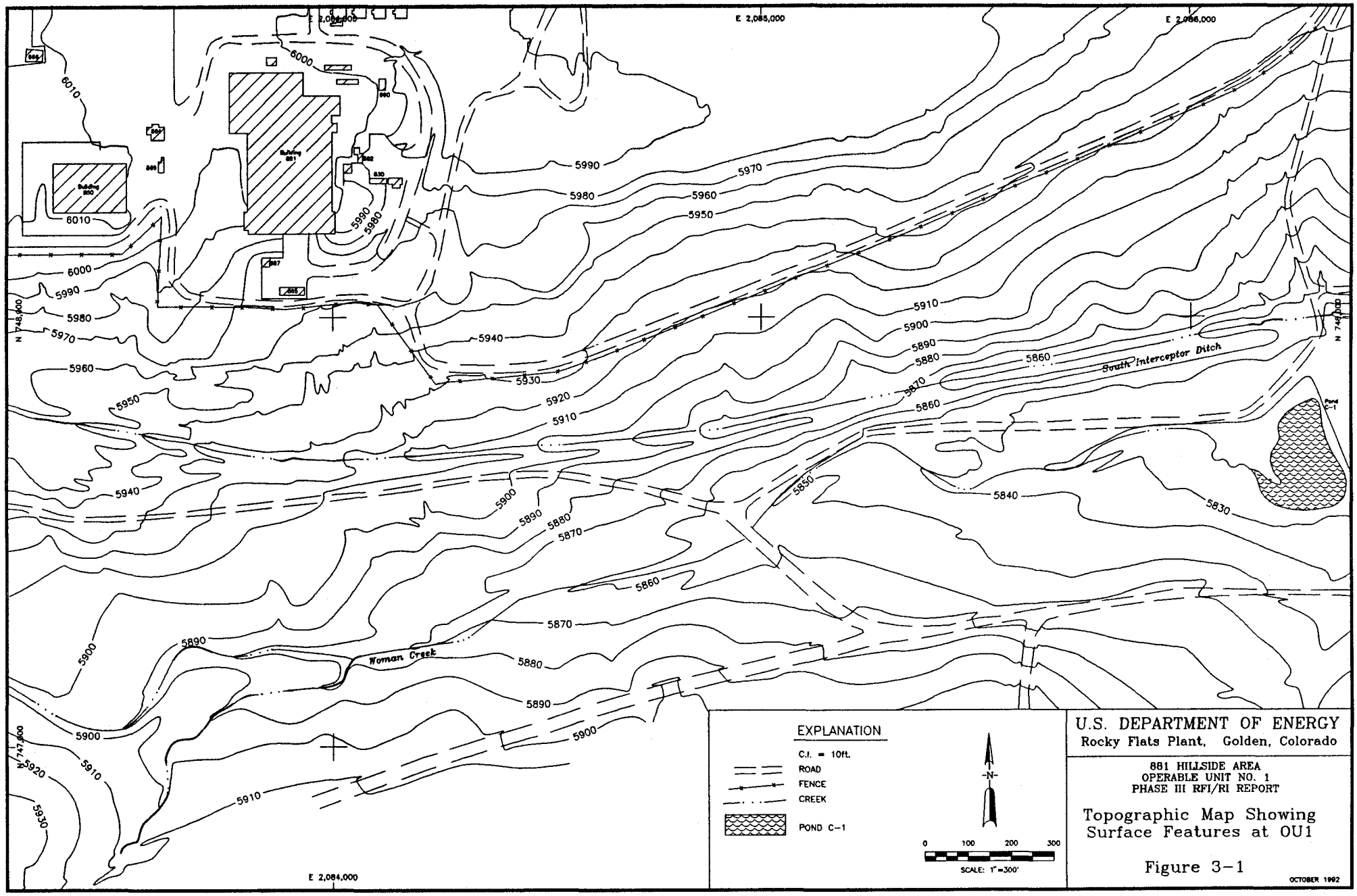
OCTOBER 1992

Section 3.0 · Figures

Physical Characteristics of OU1

Phase III RFI/RI Report

U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881
1 OU1 OU1
side 881 Hill
U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881



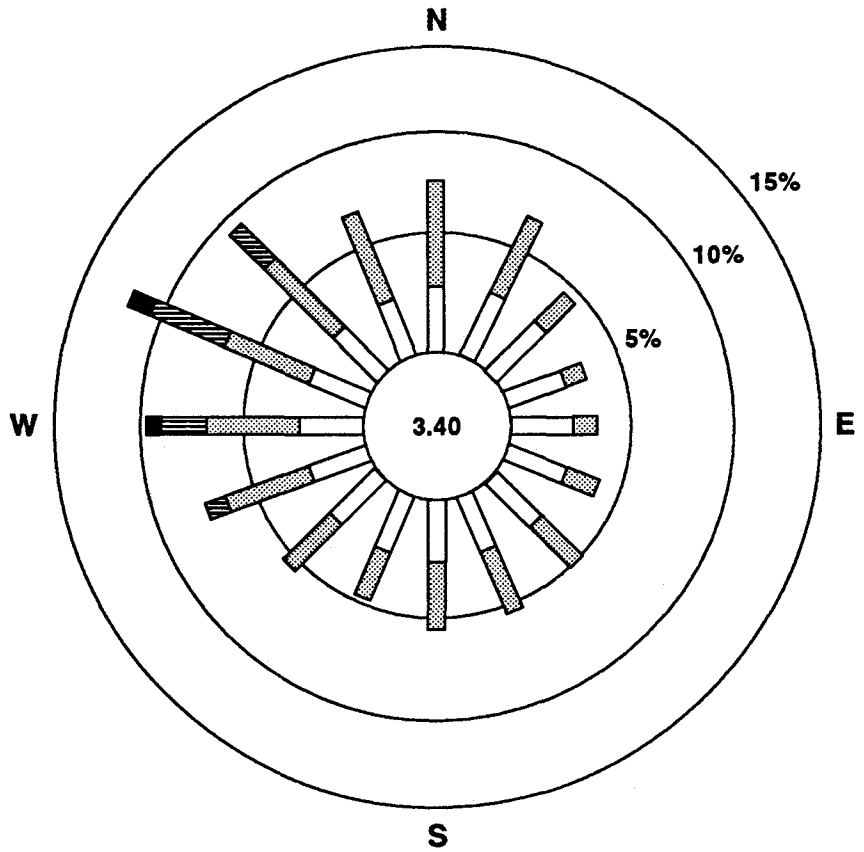
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

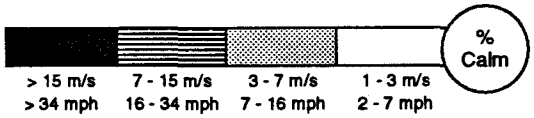
Topographic Map Showing Surface Features at OU1

Figure 3-1

OCTOBER 1992



Explanation



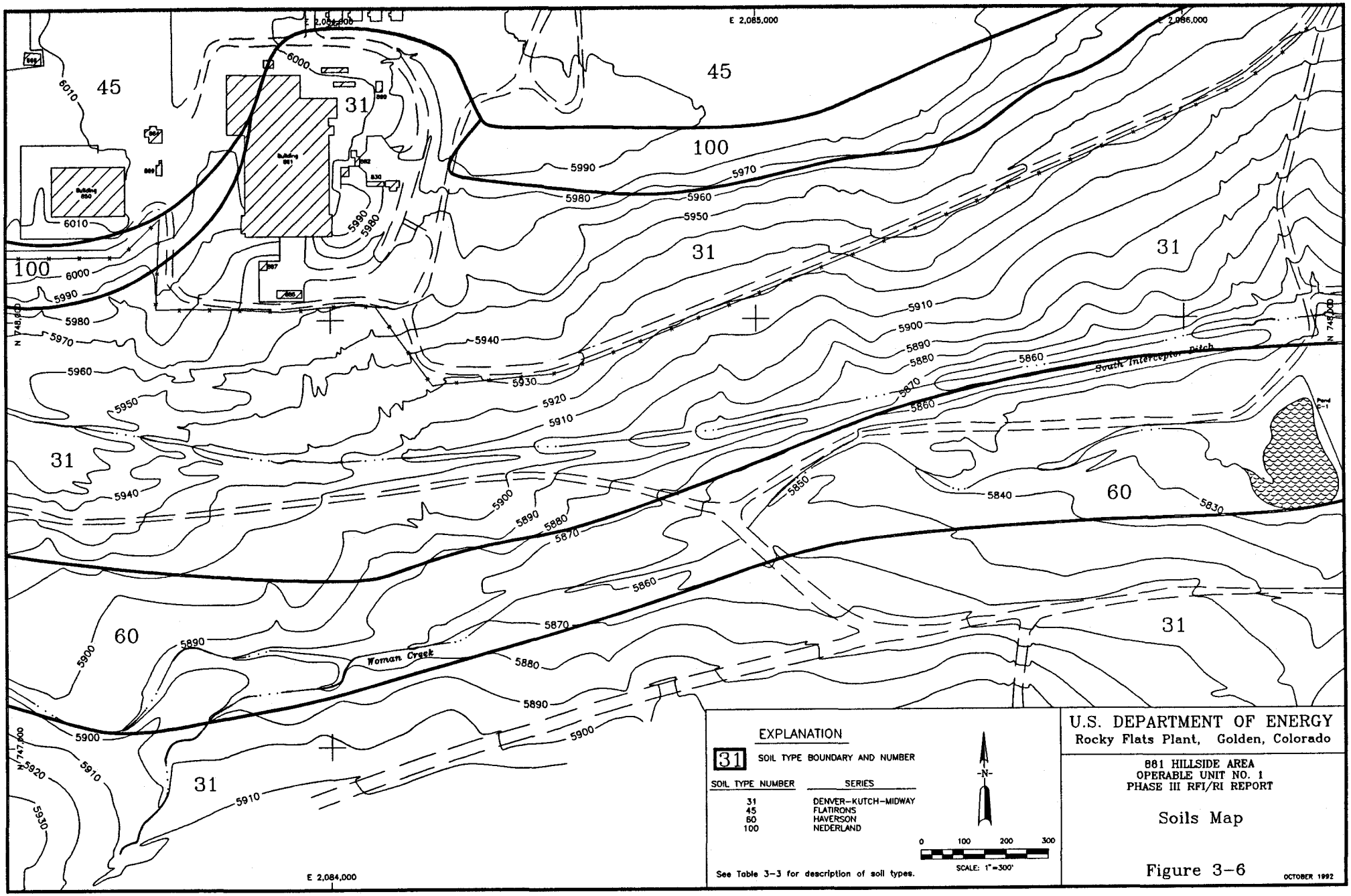
See Table 3-1 for wind direction frequency by wind speed class

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

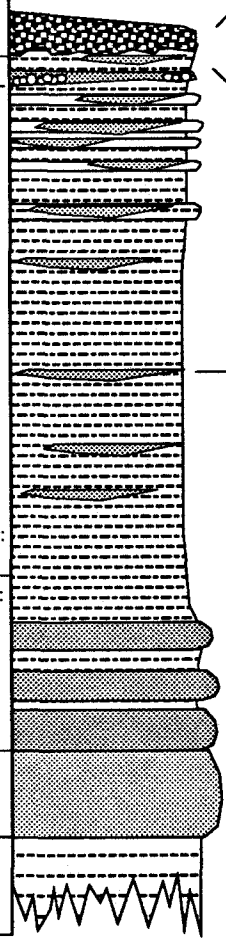
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Annual Wind Rose for the Rocky Flats Plant 1990 through 1991

Figure 3-3 OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
45
31
100
60
Woman Creek
South Interceptor ditch
Pond C-1
EXPLANATION
31 SOIL TYPE BOUNDARY AND NUMBER
SOIL TYPE NUMBER
SERIES
31 DENVER-KUTCH-MIDWAY
45 FLATIRONS
60 HAVERSON
100 NEDERLAND
See Table 3-3 for description of soil types.
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Soils Map
Figure 3-6
OCTOBER 1992

Age	Formation	Thickness (feet)
Quaternary	Rocky Flats Alluvium/ Colluvium	0-100
Cretaceous	Arapahoe Fm.	0-120
	Laramie Formation	600-800
		upper interval: 300-500
		lower interval: 300
	Fox Hills Sandstone	90-140
	Pierre Shale and older units	



Clayey Sandy Gravels - reddish brown to yellowish brown matrix, grayish-orange to dark gray, poorly sorted, angular to subrounded, cobbles, coarse gravels, coarse sands and gravelly clays: varying amounts of caliche

Claystones, Silty Claystones, and Sandstones - light to medium olive-gray with some dark olive-black claystone, silty claystone, and fine-grained sandstone, weathers yellowish orange to yellowish brown; a mappable, light to olive gray, medium- to coarse-grained, frosted sandstone to conglomeratic sandstone occurs locally at the base (Arapahoe marker bed)

Claystones, Silty Claystones, Clayey Sandstones, and Sandstones - kaolinitic, light to medium gray claystone and silty claystone and some dark gray to black carbonaceous claystone, thin (2') coal beds and thin discontinuous, very fine to medium-grained, moderately sorted sandstone intervals

Sandstones, Claystones, and Coals - light to medium gray, fine- to coarse-grained, moderately to well sorted, silty, immature quartzose sandstone with numerous claystones, and subbituminous coal beds and seams that range from 2' to 8' thick

Sandstones - grayish orange to light gray, calcareous, fine-grained, subrounded, glauconitic, friable sandstone

After EG&G 1992

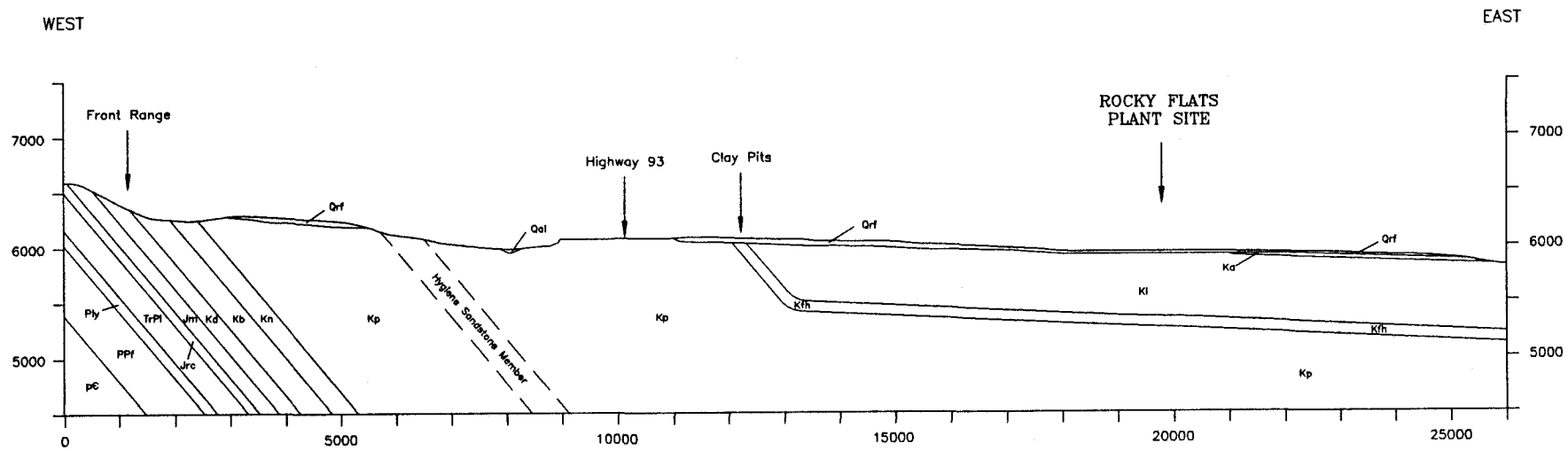
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Generalized Stratigraphic Section for the Rocky Flats Plant

Figure 3-7

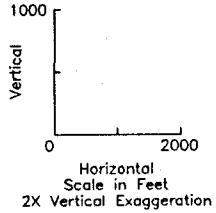
OCTOBER 1992



EXPLANATION

Qrf = Quaternary Rocky Flats Alluvium
Qal = Quaternary Valley Fill Alluvium
Ka = Cretaceous Arapahoe Formation
Kl = Cretaceous Laramie Formation
Kfh = Cretaceous Fox Hills Sandstone
Kp = Cretaceous Pierre Shale
Kn = Cretaceous Niobrara Formation
Kb = Cretaceous Benton Shale
Kd = Cretaceous Dakota Group
Jm = Jurassic Morisson Formation
Jrc = Jurassic Ralston Creek Formation
TrPl = Permo-Triassic Lykins Formation
Ply = Permian Lyons Sandstone
PPf = Pennsylvanian-Permian Fountain Formation
p€ = Precambrian

After EG&G (1992c)



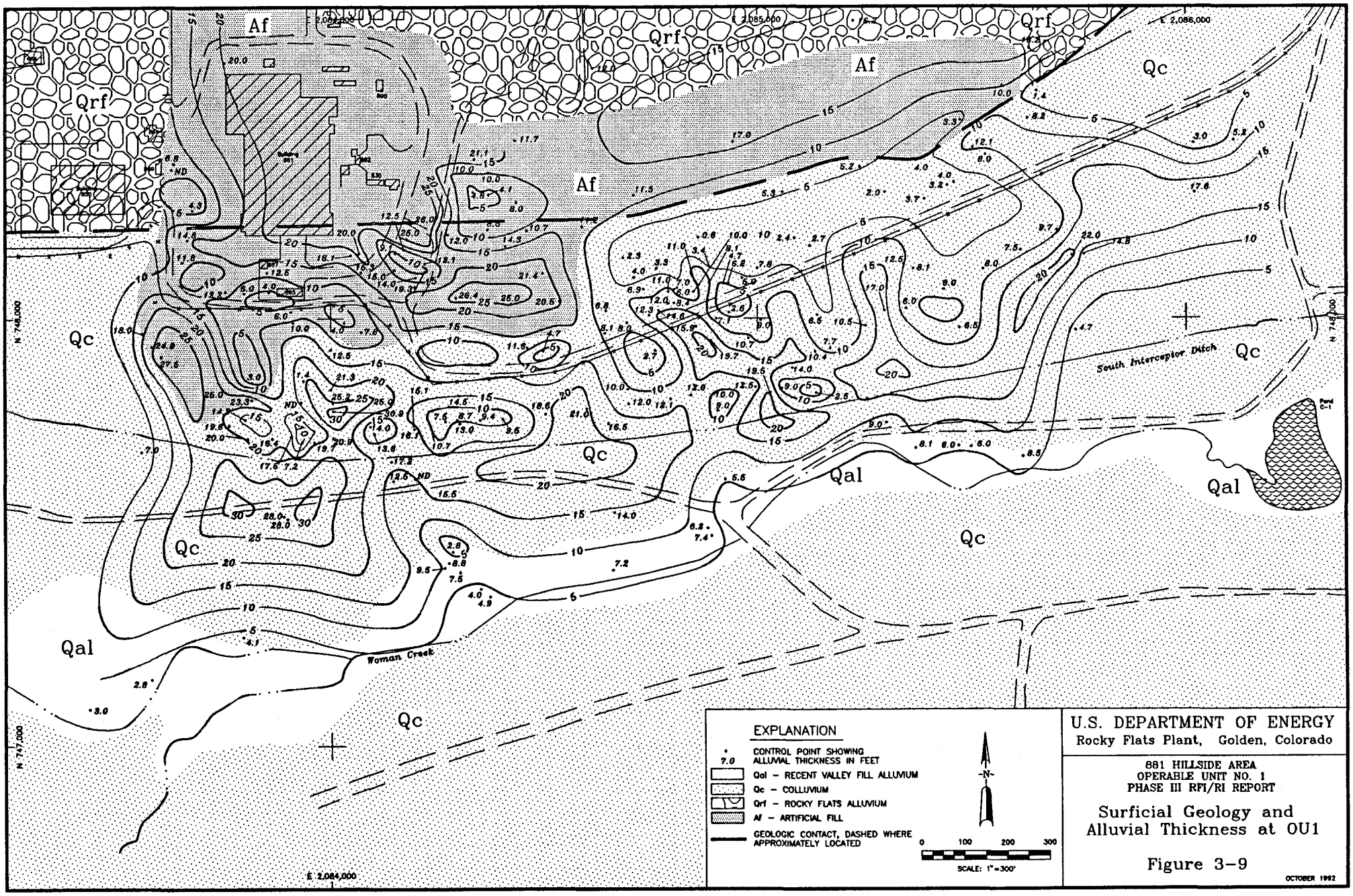
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Generalized East-West
Cross Section,
Front Range to Rocky Flats

Figure 3-8

OCTOBER 1992



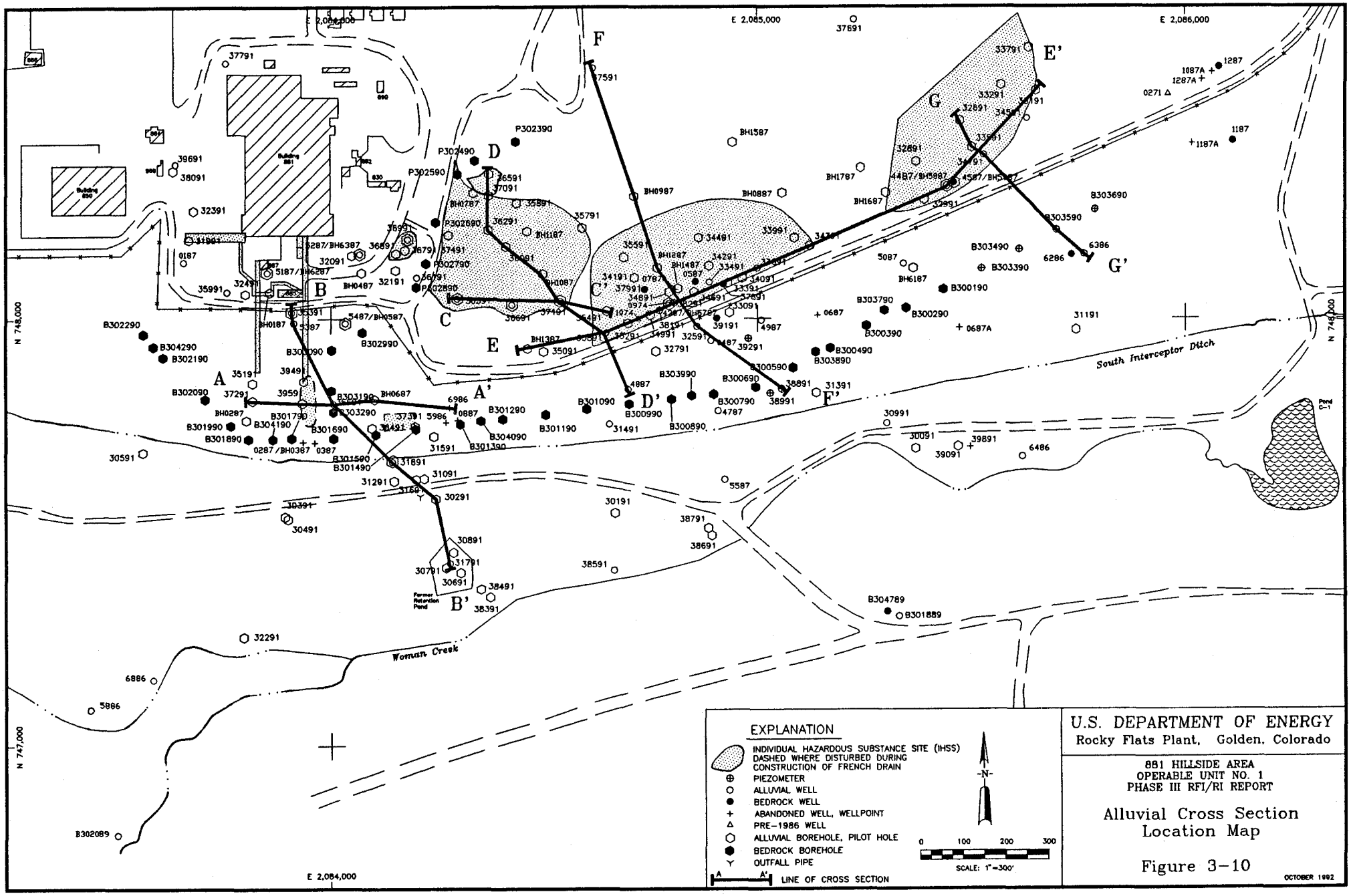
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

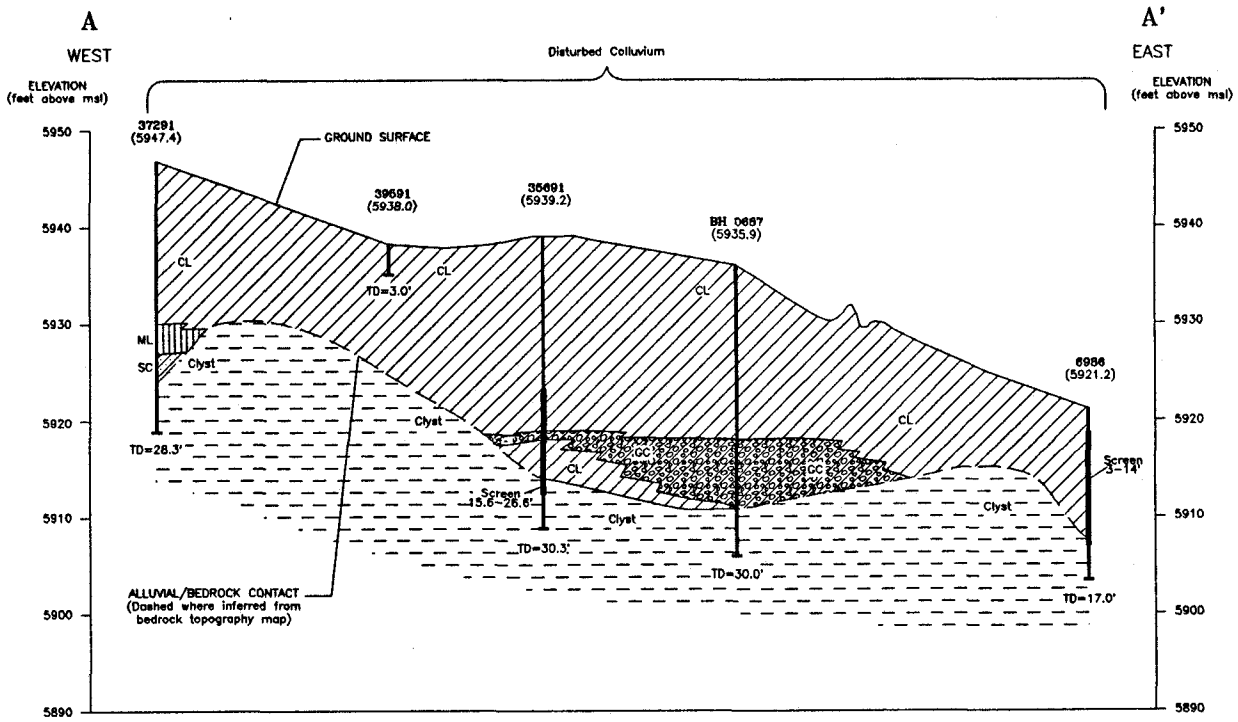
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Surficial Geology and Alluvial Thickness at OU1

Figure 3–9

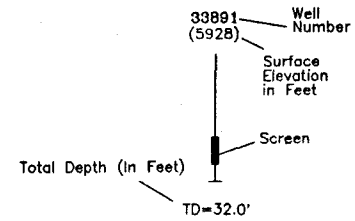
OCTOBER 1992

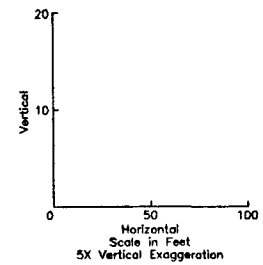

EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ABANDONED WELL, WELLPOINT
PRE-1986 WELL
ALLUVIAL BOREHOLE, PILOT HOLE
BEDROCK BOREHOLE
OUTFALL PIPE
LINE OF CROSS SECTION
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Alluvial Cross Section Location Map
Figure 3-10
OCTOBER 1992
South Interceptor Ditch
Woman Creek
Former Retention Pond
E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
A
A'
B
B'
C
C'
D
D'
E
E'
F
F'
G
G'



EXPLANATION

- GM/GC – Silty or Clayey Gravels
- SM/SC – Silty or Clayey Sands
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone





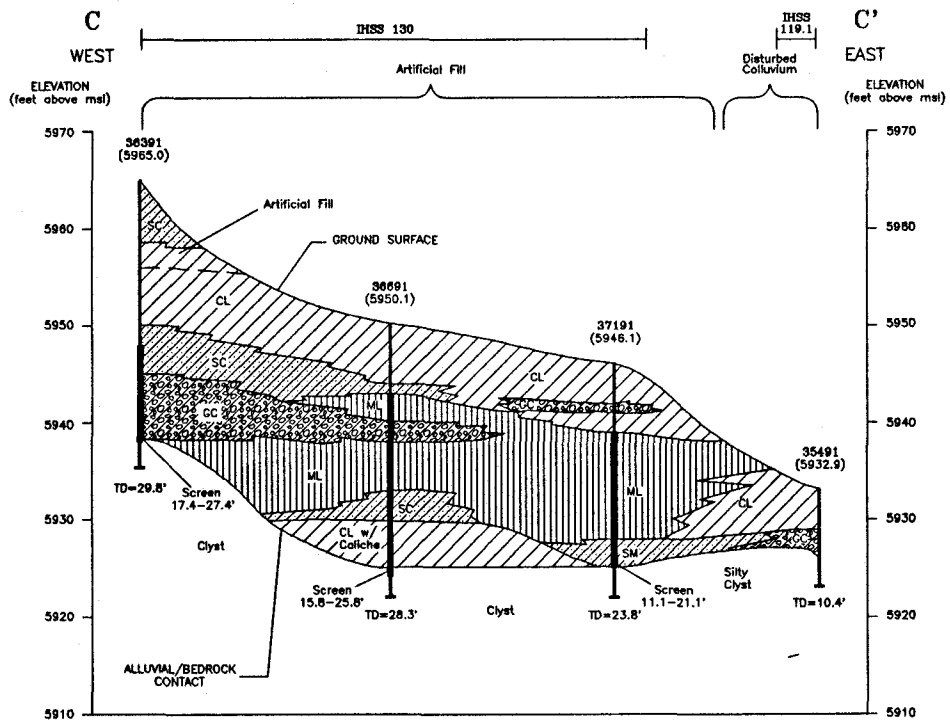
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Alluvial Cross Section
A–A'

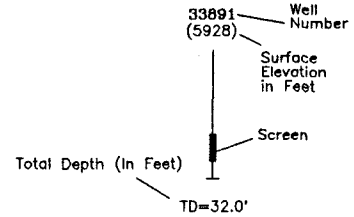
Figure 3-11

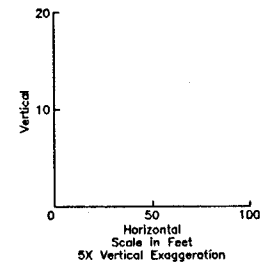
OCTOBER 1992



EXPLANATION

- GM/GC – Silty or Clayey Gravels
- SM/SC – Silty or Clayey Sands
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone





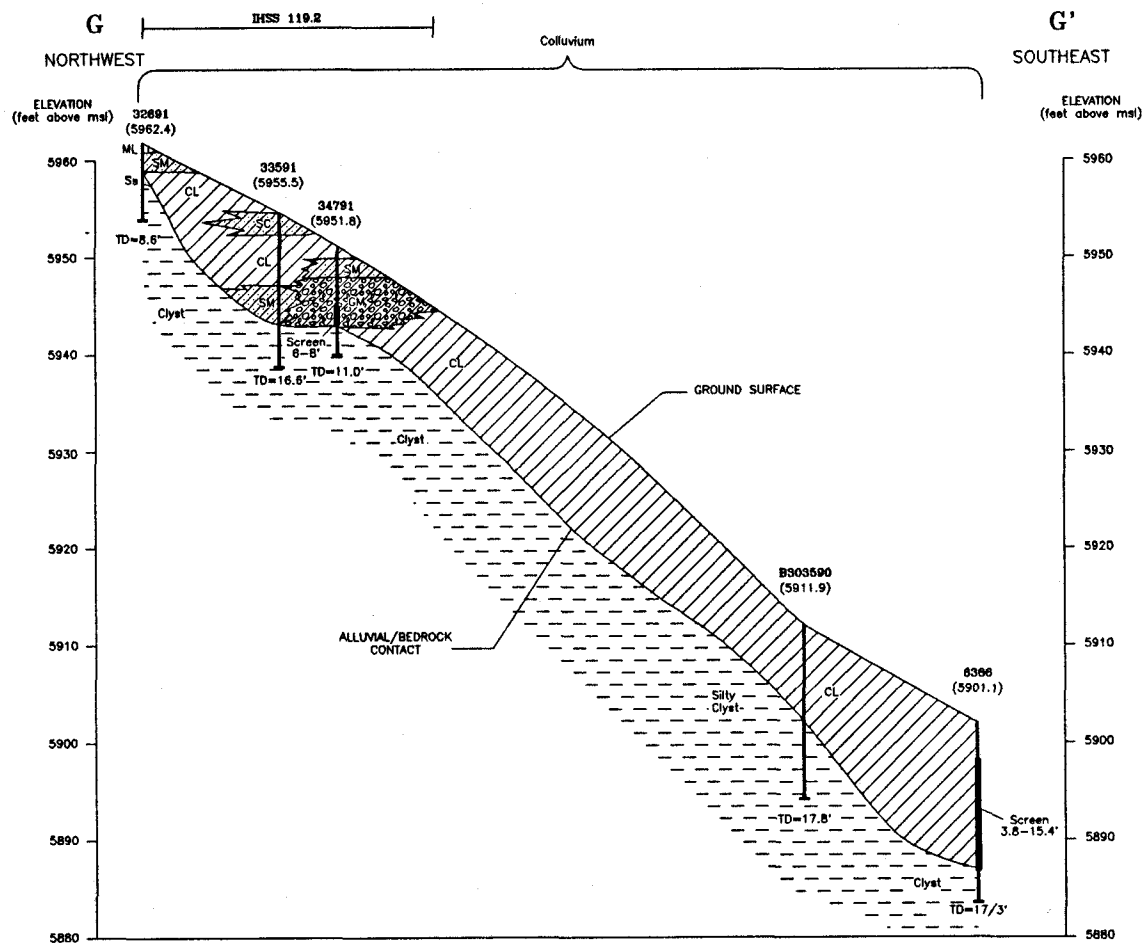
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Alluvial Cross Section
C–C'

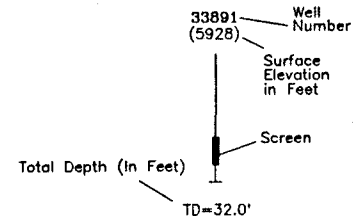
Figure 3–13

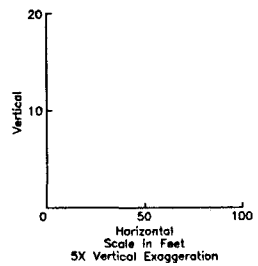
OCTOBER 1992



EXPLANATION

- GM/GC – Silty or Clayey Gravels
- SM/SC – Silty or Clayey Sands
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone





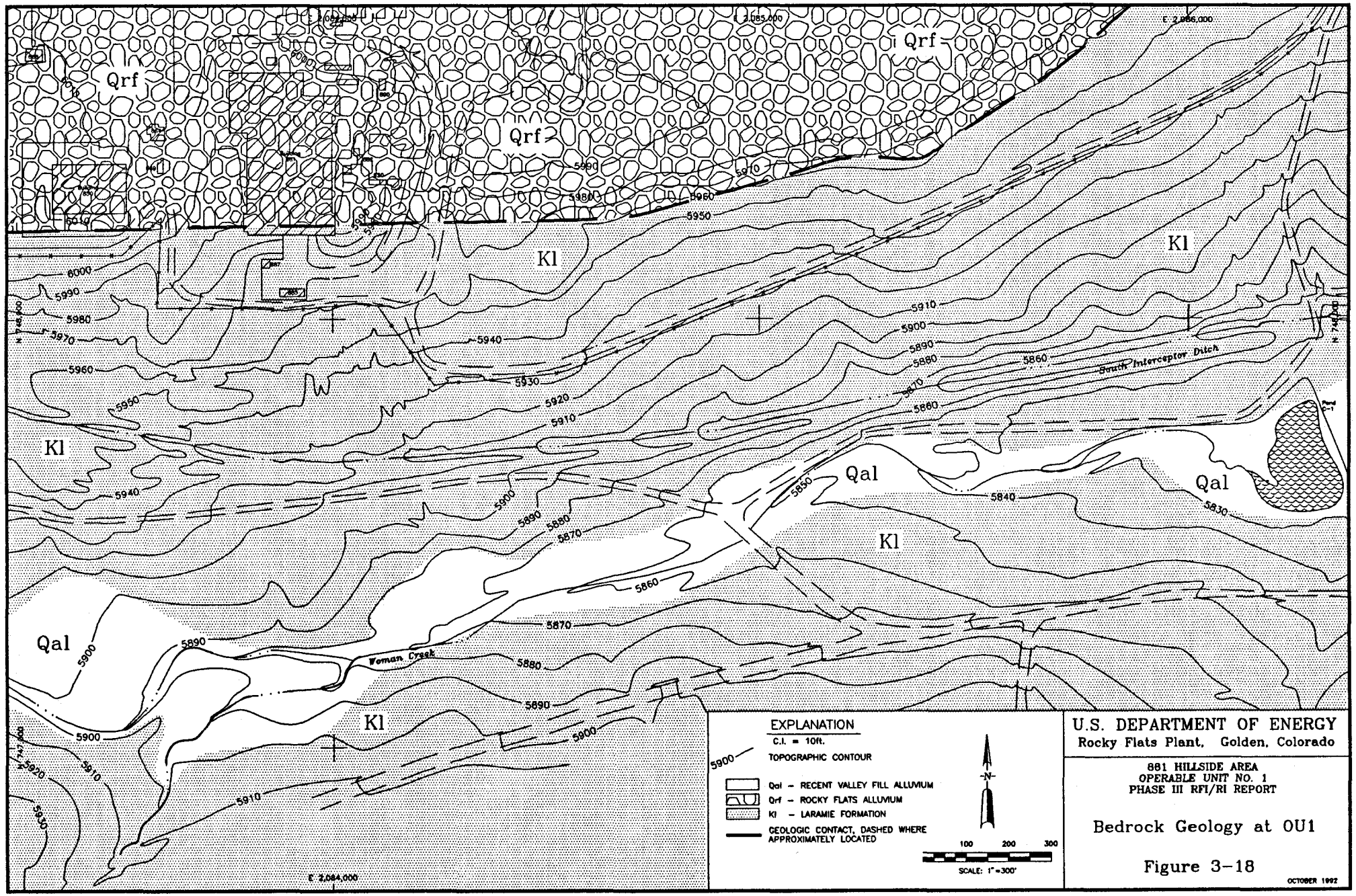
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

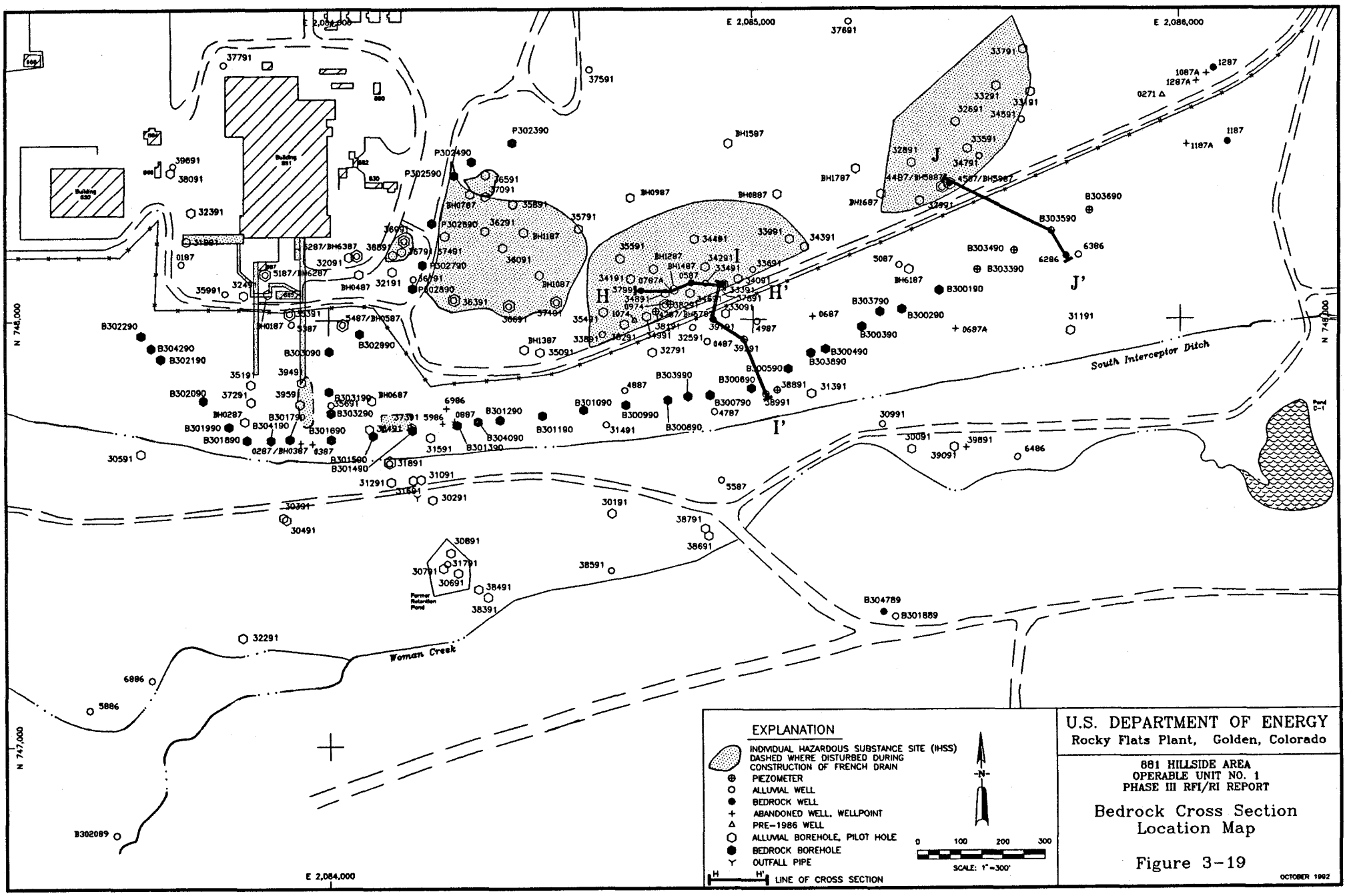
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Alluvial Cross Section
G–G'

Figure 3–17

OCTOBER 1992


Qrf
Kl
Qal
Woman Creek
South Interceptor Ditch
EXPLANATION
C.I. = 10ft.
5900 TOPOGRAPHIC CONTOUR
Qal – RECENT VALLEY FILL ALLUVIUM
Qrf – ROCKY FLATS ALLUVIUM
Kl – LARAMIE FORMATION
GEOLOGIC CONTACT, DASHED WHERE APPROXIMATELY LOCATED
N
100 200 300
SCALE: 1" = 300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Bedrock Geology at OU1
Figure 3-18
OCTOBER 1992



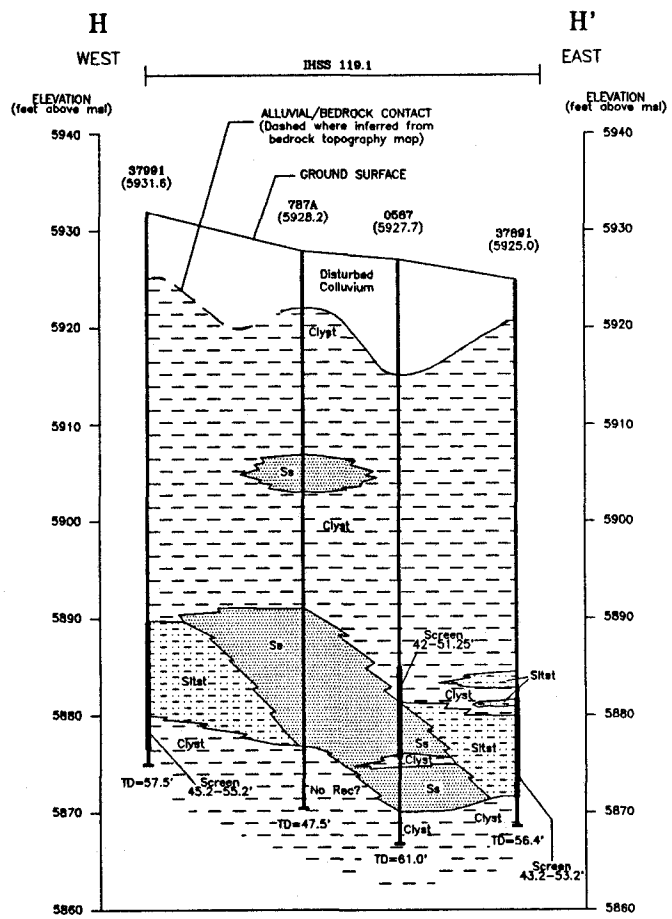
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Bedrock Cross Section Location Map

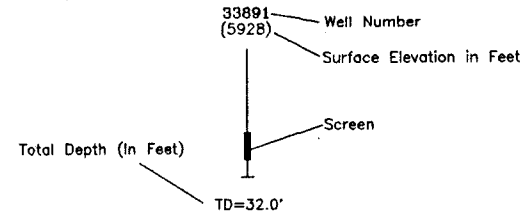
Figure 3-19

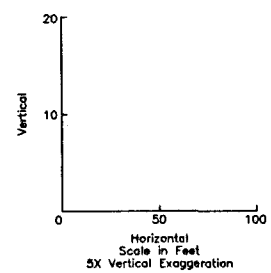
OCTOBER 1992



EXPLANATION

- Disturbed Colluvium
- Clyst – Claystone
- Ss – Sandstone
- Sltst – Siltstone





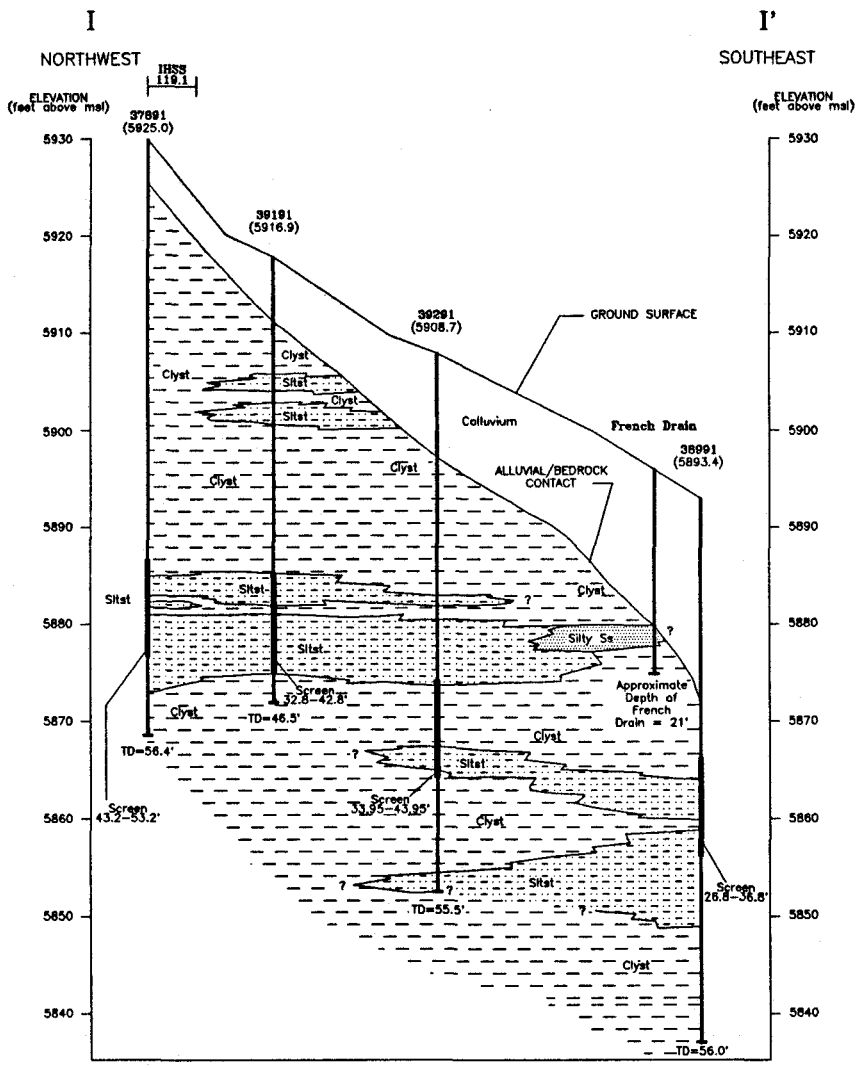
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Bedrock Cross Section
H–H'

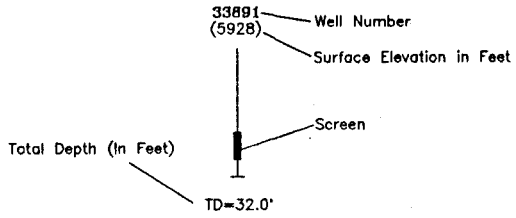
Figure 3–20

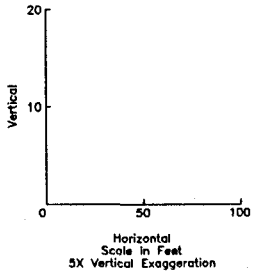
OCTOBER 1992



EXPLANATION

- Colluvium
- Siltst – Siltstone
- Clyst – Claystone
- Ss – Sandstone
- Disturbed Bedrock – Moved or Slumped Bedrock





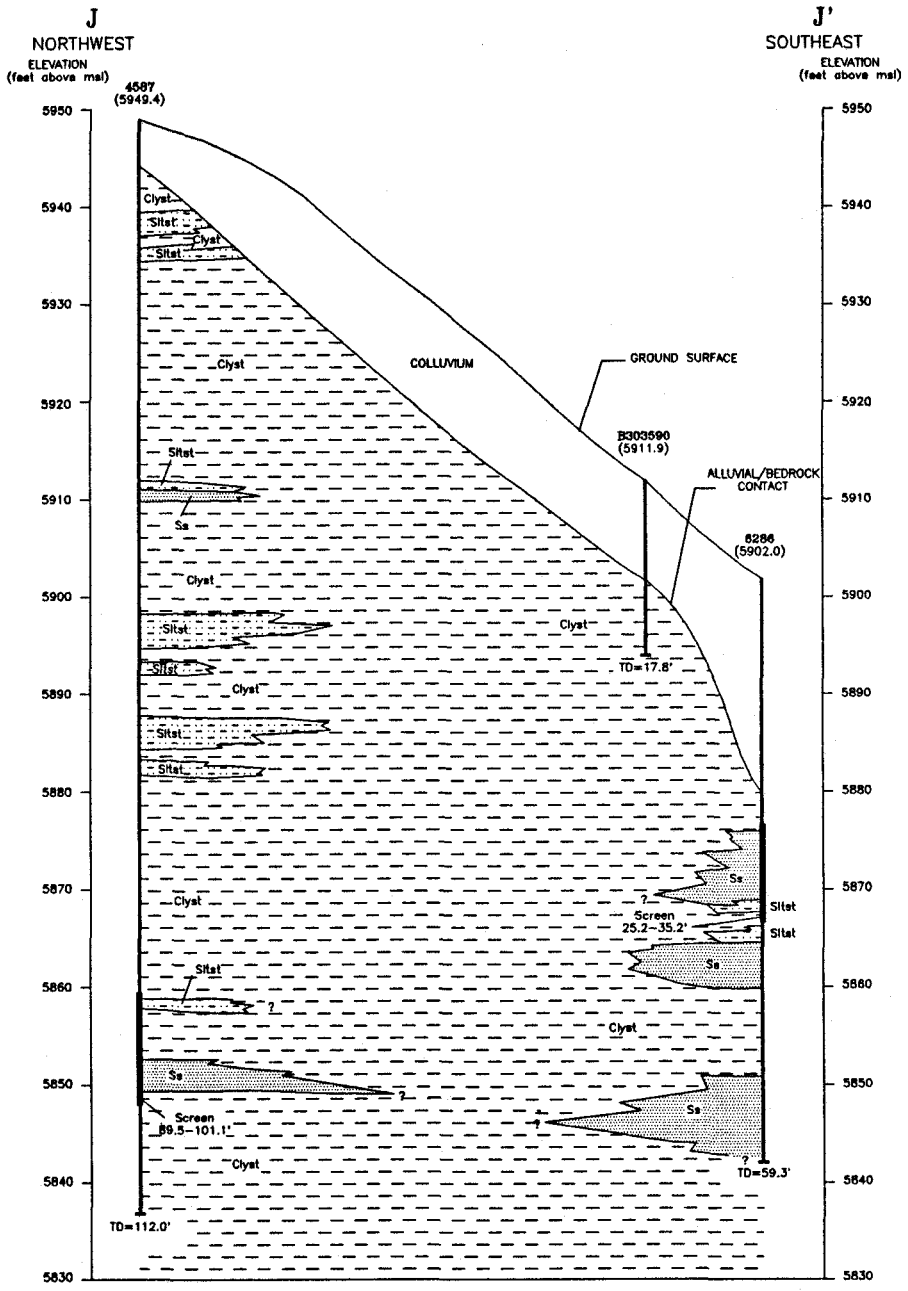
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Bedrock Cross Section
I–I'

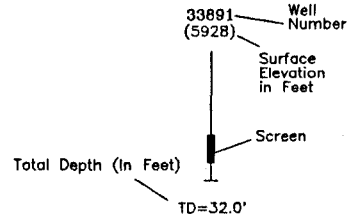
Figure 3–21

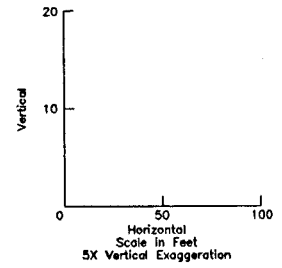
OCTOBER 1992



EXPLANATION

- Clyst – Claystone
- Ss – Sandstone
- Siltst – Siltstone





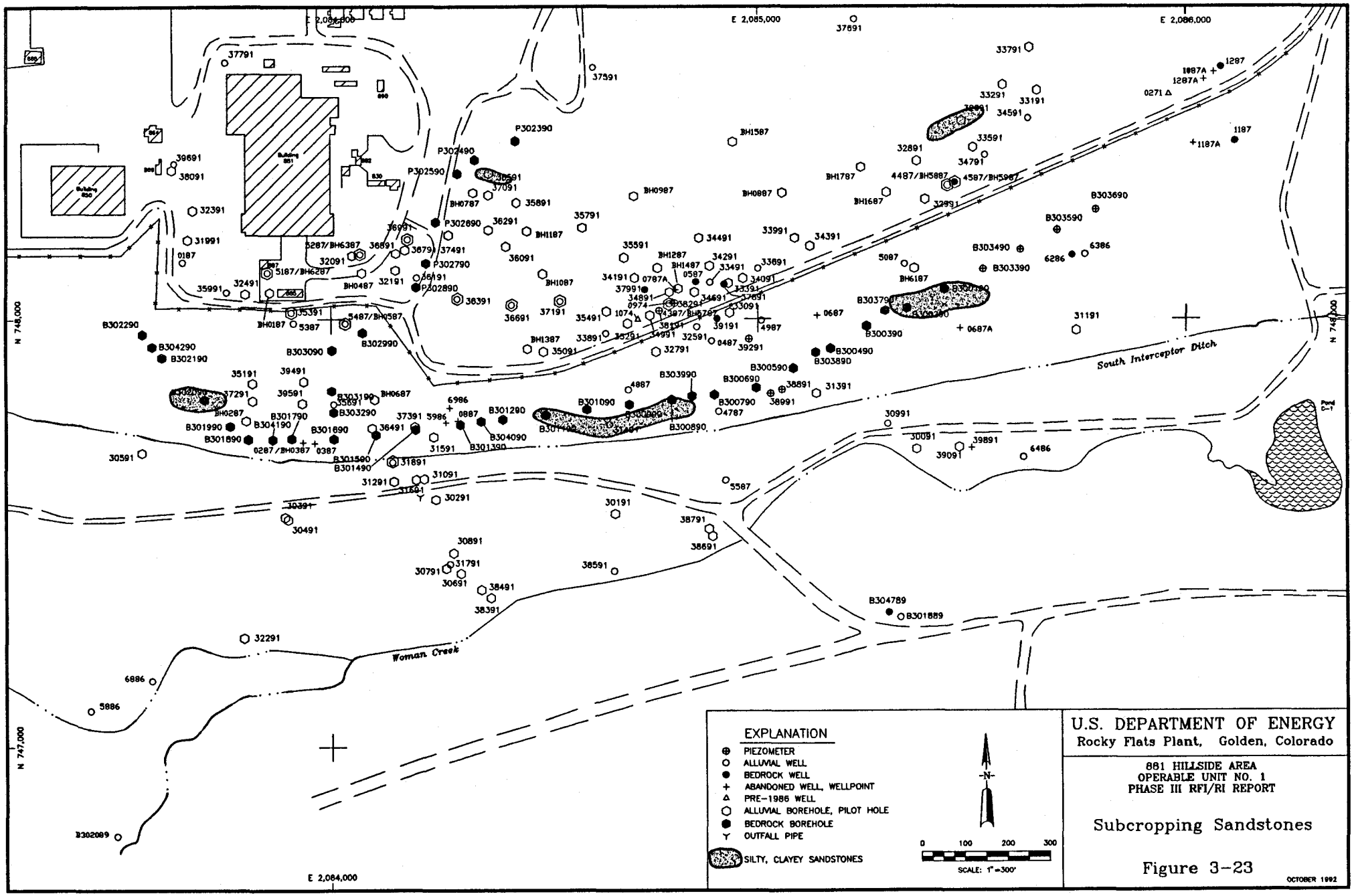
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

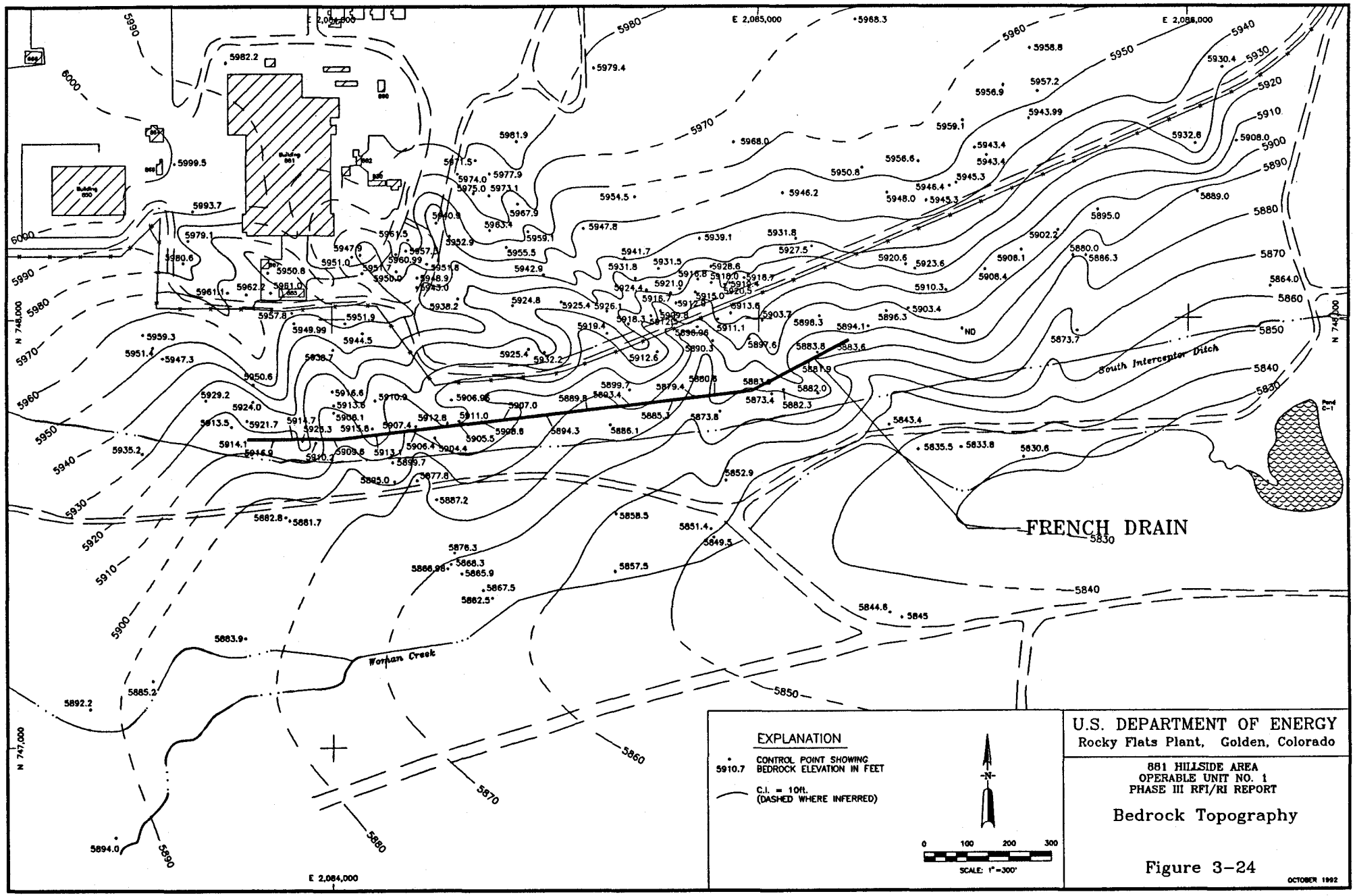
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

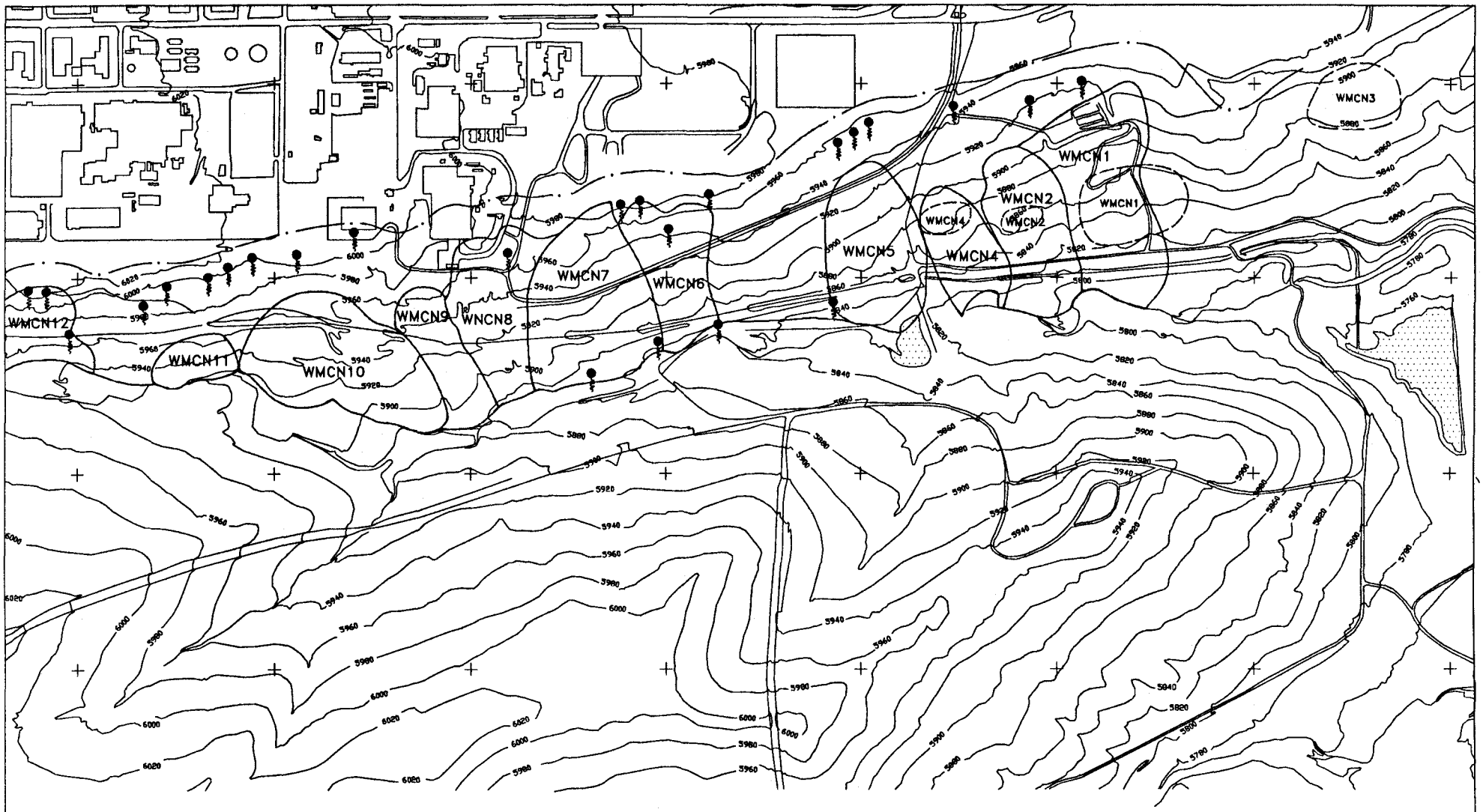
Bedrock Cross Section
J–J'

Figure 3–22

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
South Interceptor Ditch
Woman Creek
EXPLANATION
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ABANDONED WELL, WELLPOINT
PRE-1986 WELL
ALLUVIAL BOREHOLE, PILOT HOLE
BEDROCK BOREHOLE
OUTFALL PIPE
SILTY, CLAYEY SANDSTONES
-N-
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Subcropping Sandstones
Figure 3-23
OCTOBER 1992


FRENCH DRAIN
South Interceptor Ditch
Woman Creek
Pond C-1
E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
EXPLANATION
5910.7 CONTROL POINT SHOWING BEDROCK ELEVATION IN FEET
C.I. = 10ft. (DASHED WHERE INFERRED)
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Bedrock Topography
Figure 3-24
OCTOBER 1992



EXPLANATION

WMCN1 Potential Slumps–Photointerpretation

Potential Seeps–Photointerpretation

WMCN4 Sump mapped in French Drain Geotechnical Investigation (EG&G, 1990)

Crest of 881 Hillside

-N-

0 250 500 750

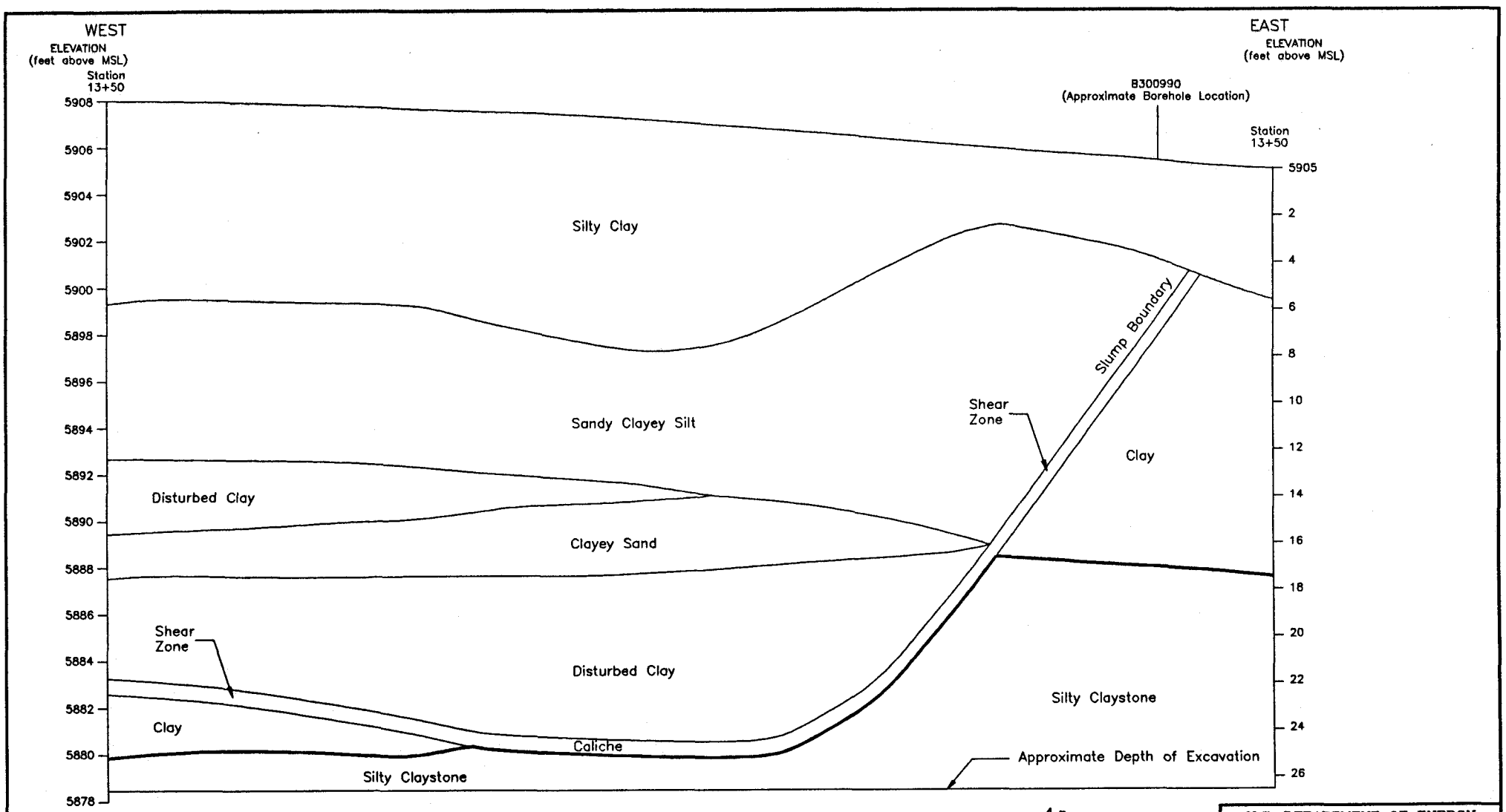
SCALE IN FEET

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Geomorphological Features–
Photo Interpretation of
Slumps and Seeps
(1951 Aerial Photographs)
Figure 3–25

OCTOBER 1992



(Modified from Map 19 Appendix A4)

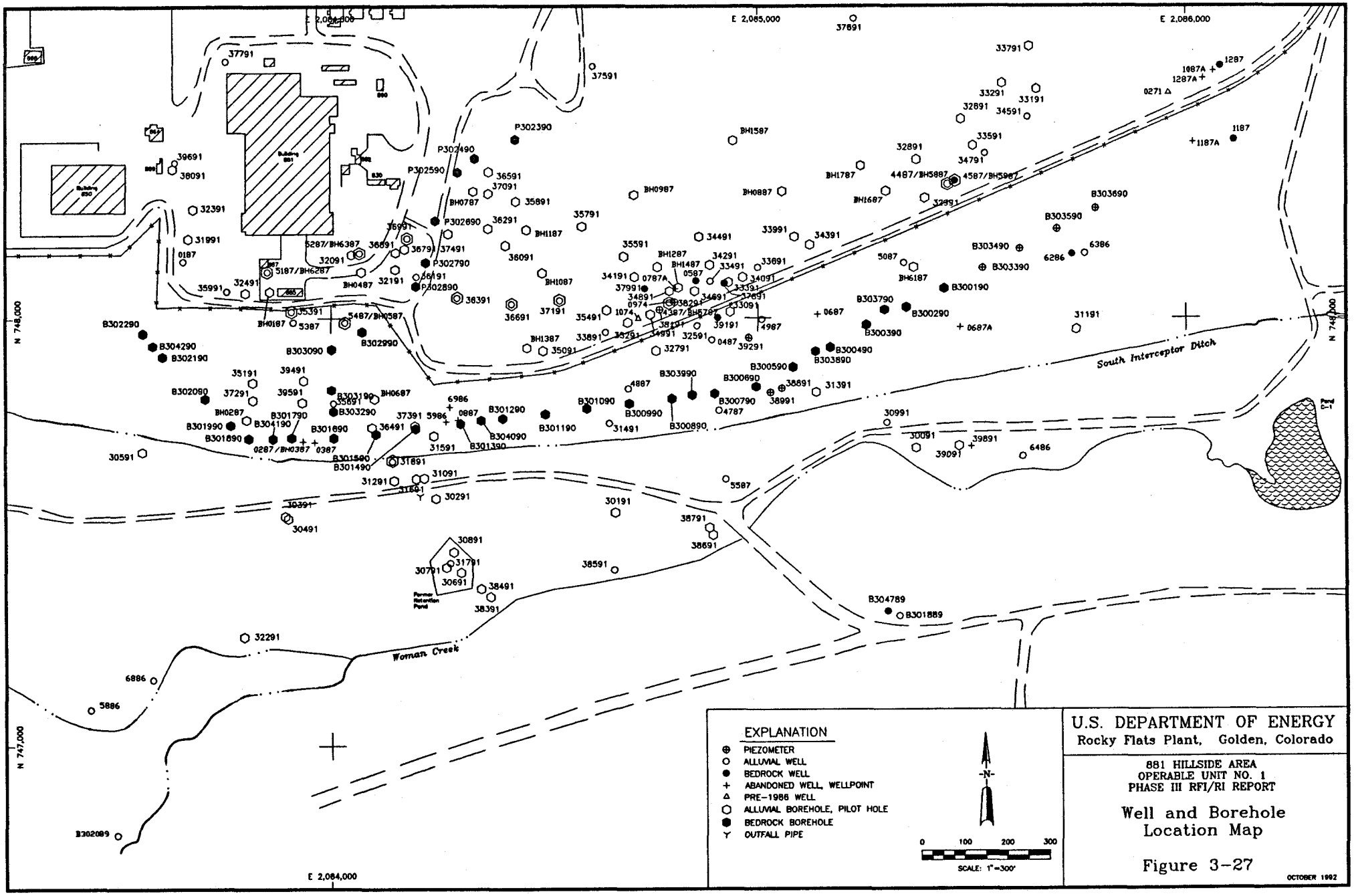
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

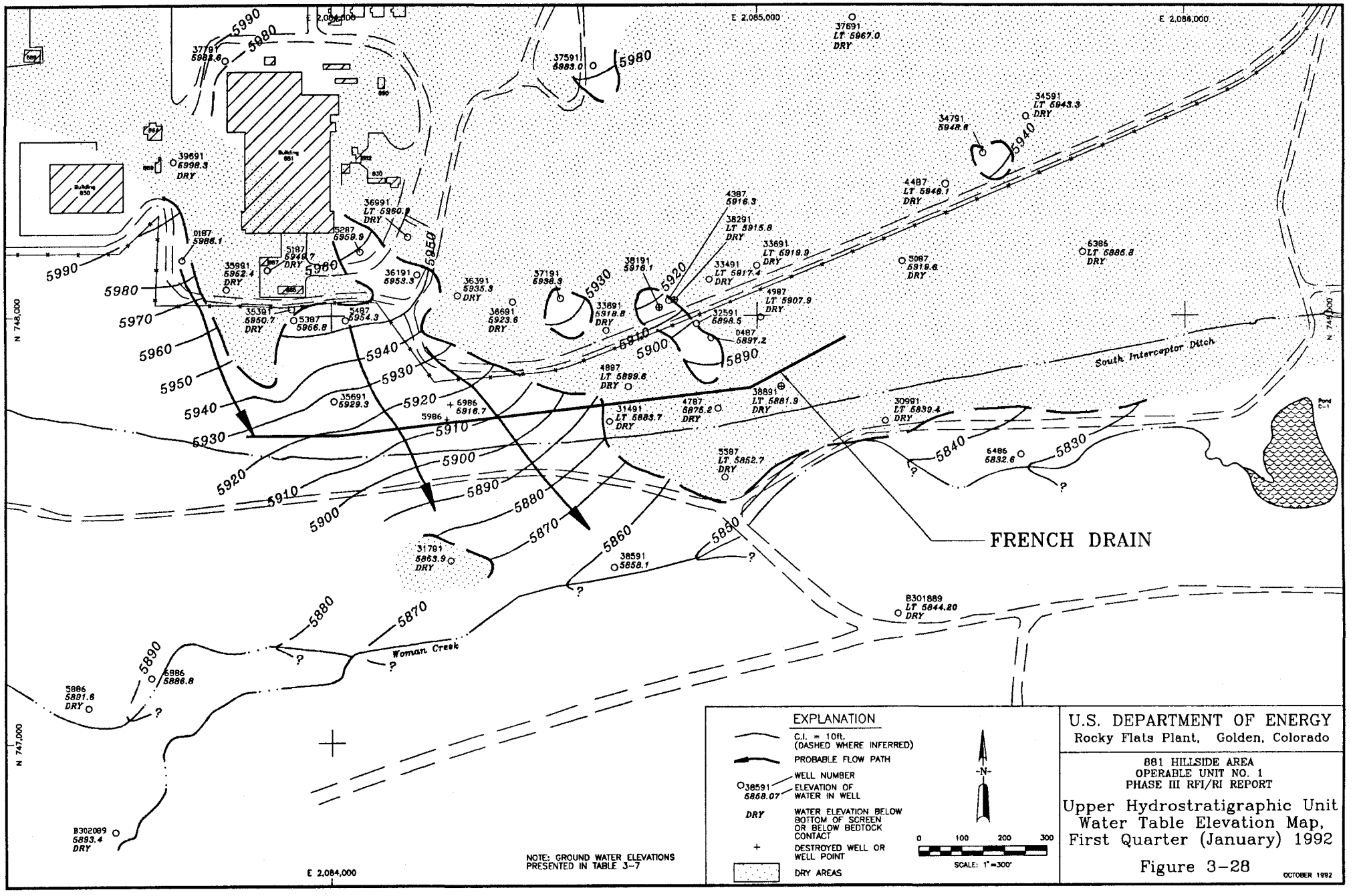
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

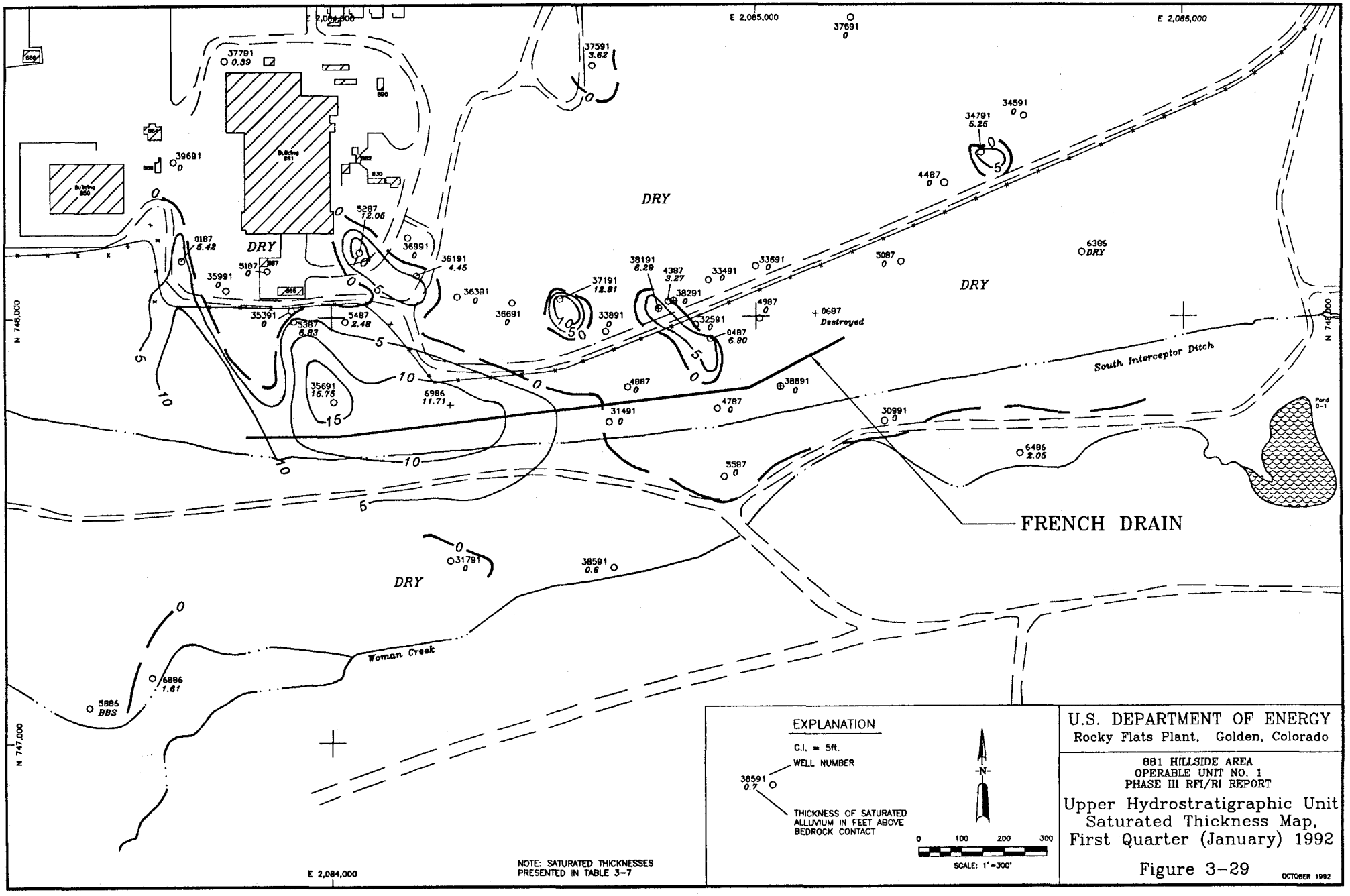
Panel from French Drain
Showing Slumps

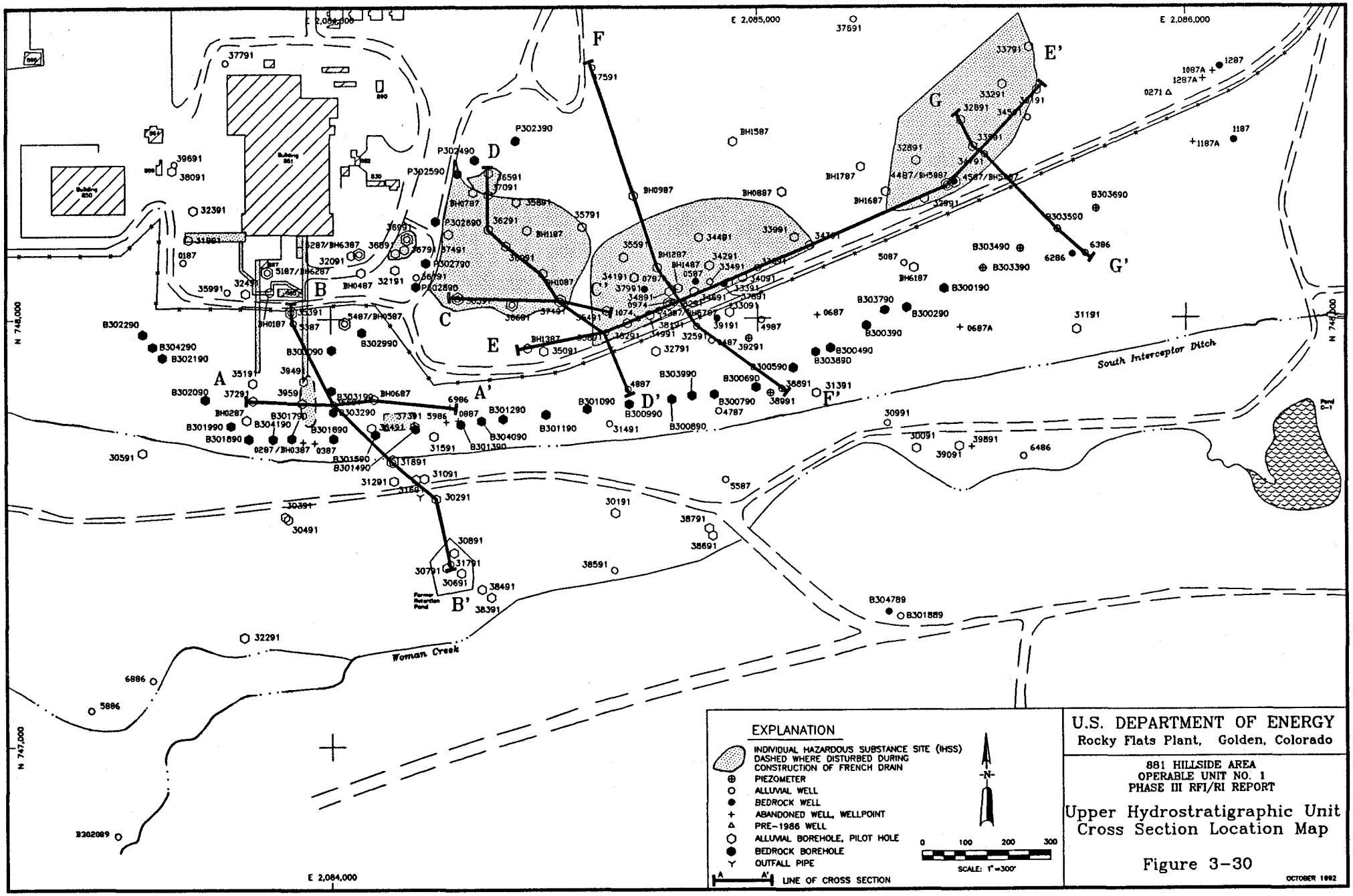
Figure 3-26

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
South Interceptor Ditch
Woman Creek
Former Retention Pond
Pond C-1
EXPLANATION
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ABANDONED WELL, WELLPOINT
PRE-1986 WELL
ALLUVIAL BOREHOLE, PILOT HOLE
BEDROCK BOREHOLE
OUTFALL PIPE
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Well and Borehole Location Map
Figure 3-27
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
South Interceptor Ditch
Woman Creek
FRENCH DRAIN
Pond C-1
37791 5983.6
37591 5983.0
37691 LT 5967.0 DRY
34591 LT 5943.3 DRY
34791 5948.8
39691 5998.3 DRY
4487 LT 5946.1 DRY
36991 LT 5960.9 DRY
0187 5986.1
5287 5959.9
5187 5949.7 DRY
35991 5962.4 DRY
36191 5953.3
36391 5935.3 DRY
37191 5938.3
36691 5923.6 DRY
4387 5916.3
38291 LT 5915.8 DRY
33691 LT 5919.9 DRY
33491 LT 5917.4 DRY
38191 5916.1
33891 5918.8 DRY
4987 LT 5907.9 DRY
32591 5898.5
0487 5897.2
5067 5919.6 DRY
6386 LT 5886.8 DRY
35391 5950.7 DRY
5397 5956.8
5497 5954.3
35691 5929.3
6986 5916.7
5986
4887 LT 5899.6 DRY
31491 LT 5883.7 DRY
4787 5875.2 DRY
38891 LT 5881.9 DRY
30991 LT 5839.4 DRY
5387 LT 5852.7 DRY
6486 5832.6
31791 5863.9 DRY
38591 5858.1
B301889 LT 5844.20 DRY
5886 5891.6 DRY
5886 5886.8
B302089 5893.4 DRY
5990
5980
5970
5960
5950
5940
5930
5920
5910
5900
5890
5880
5870
5860
5850
5840
5830
EXPLANATION
C.I. = 10ft. (DASHED WHERE INFERRED)
PROBABLE FLOW PATH
WELL NUMBER
38591 5858.07 ELEVATION OF WATER IN WELL
DRY WATER ELEVATION BELOW BOTTOM OF SCREEN OR BELOW BEDTOCK CONTACT
DESTROYED WELL OR WELL POINT
DRY AREAS
N
0 100 200 300
SCALE: 1" = 300'
NOTE: GROUND WATER ELEVATIONS PRESENTED IN TABLE 3-7
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Upper Hydrostratigraphic Unit Water Table Elevation Map, First Quarter (January) 1992
Figure 3-28
OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
DRY
Destroyed
South Interceptor Ditch
Woman Creek
FRENCH DRAIN
Pond C-1
EXPLANATION
C.I. = 5ft.
WELL NUMBER
38591
0.7
THICKNESS OF SATURATED ALLUVIUM IN FEET ABOVE BEDROCK CONTACT
N
0 100 200 300
SCALE: 1" = 300'
NOTE: SATURATED THICKNESSES PRESENTED IN TABLE 3-7
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Upper Hydrostratigraphic Unit
Saturated Thickness Map,
First Quarter (January) 1992
Figure 3-29
OCTOBER 1992



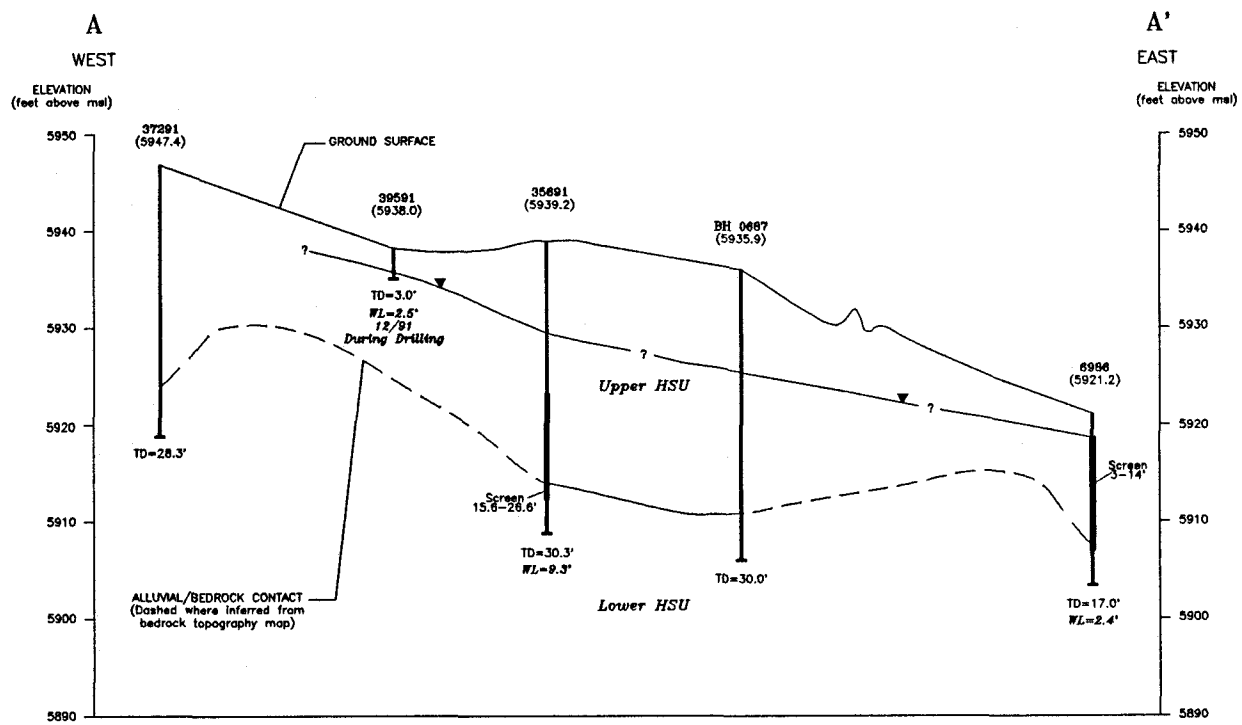
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

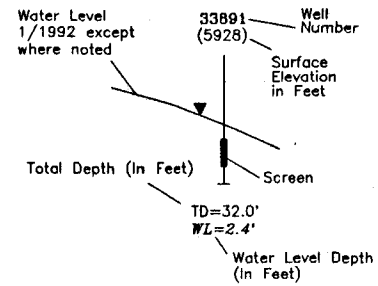
Upper Hydrostratigraphic Unit Cross Section Location Map

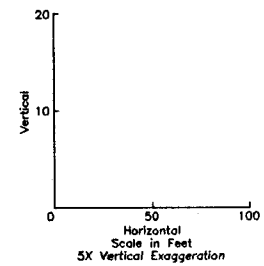
Figure 3-30

OCTOBER 1992



EXPLANATION





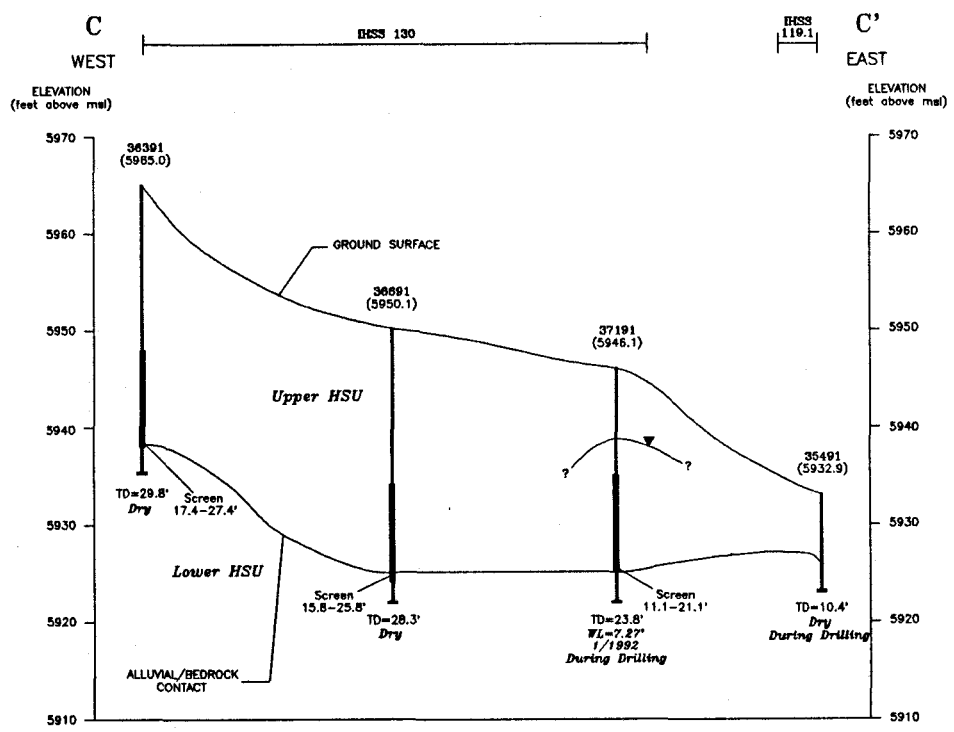
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

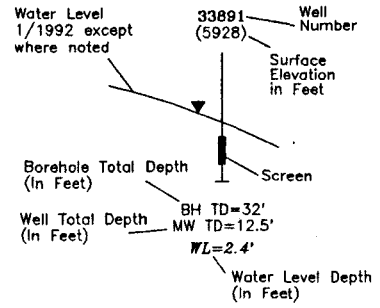
Upper Hydrostratigraphic Unit
Cross Section A–A'

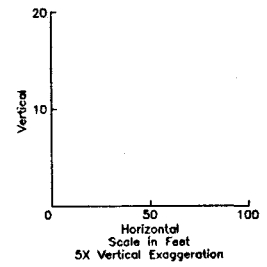
Figure 3–31

OCTOBER 1992



EXPLANATION





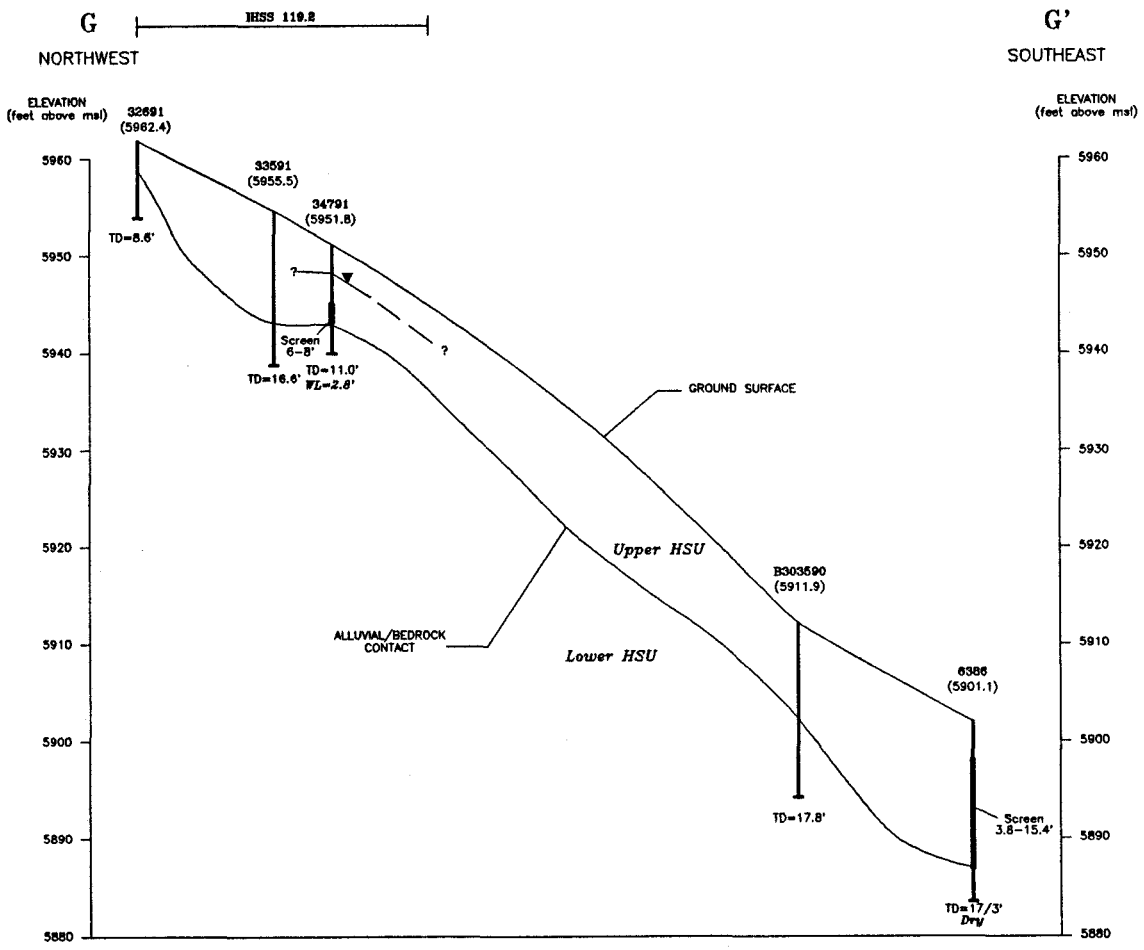
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

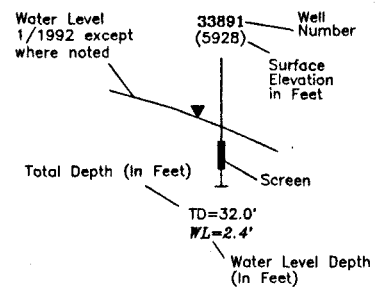
Upper Hydrostratigraphic Unit
Cross Section C–C'

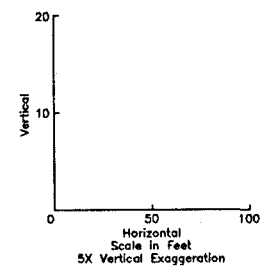
Figure 3–33

OCTOBER 1992



EXPLANATION





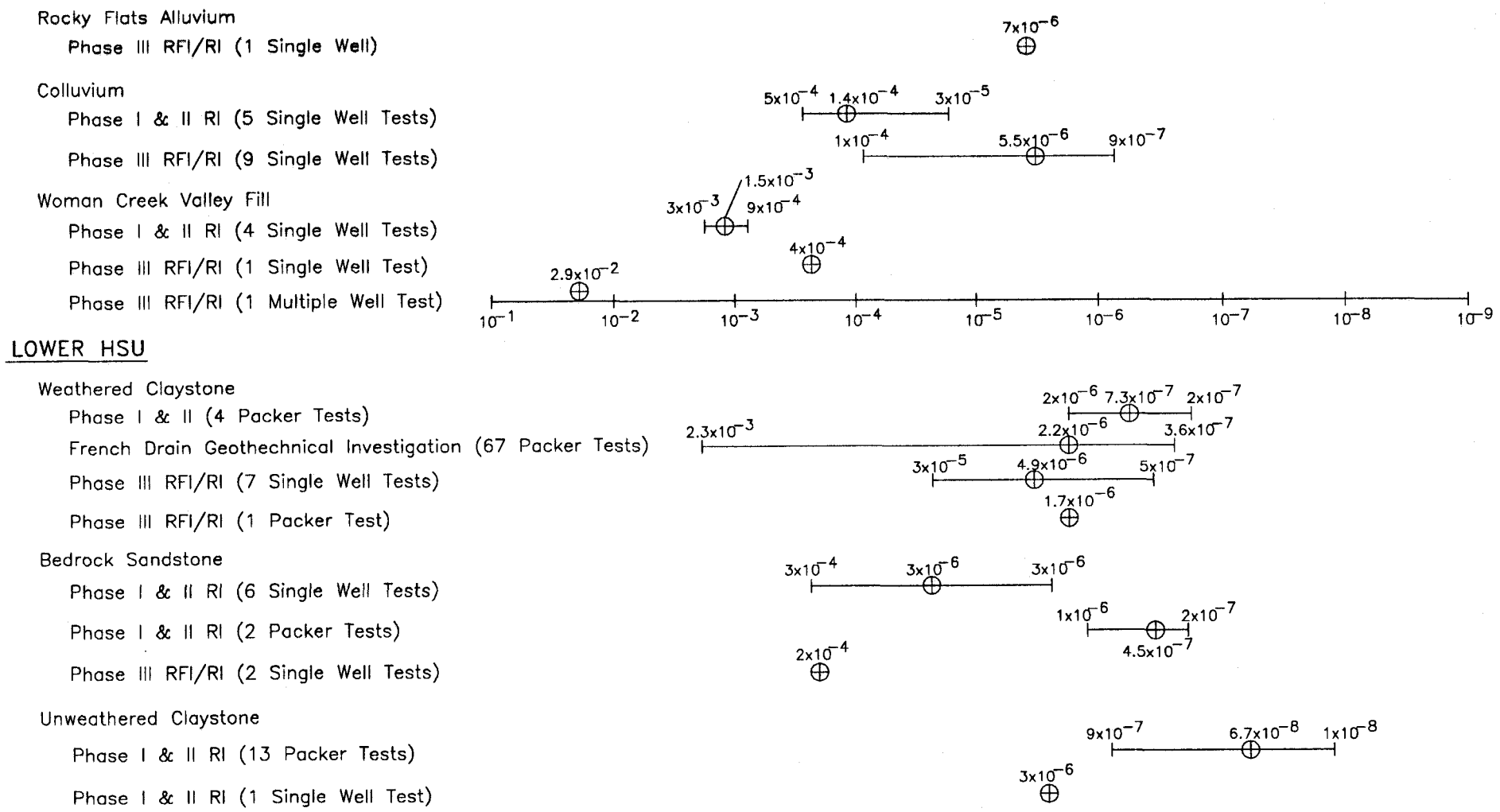
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Upper Hydrostratigraphic Unit
Cross Section G-G'

Figure 3-37

OCTOBER 1992



NOTES:
All Hydraulic Conductivity Values in cm/sec presented in Tables 3-5,3-6,3-11 3-12, and 3-13

⊕ Geometric Mean of Range Presented

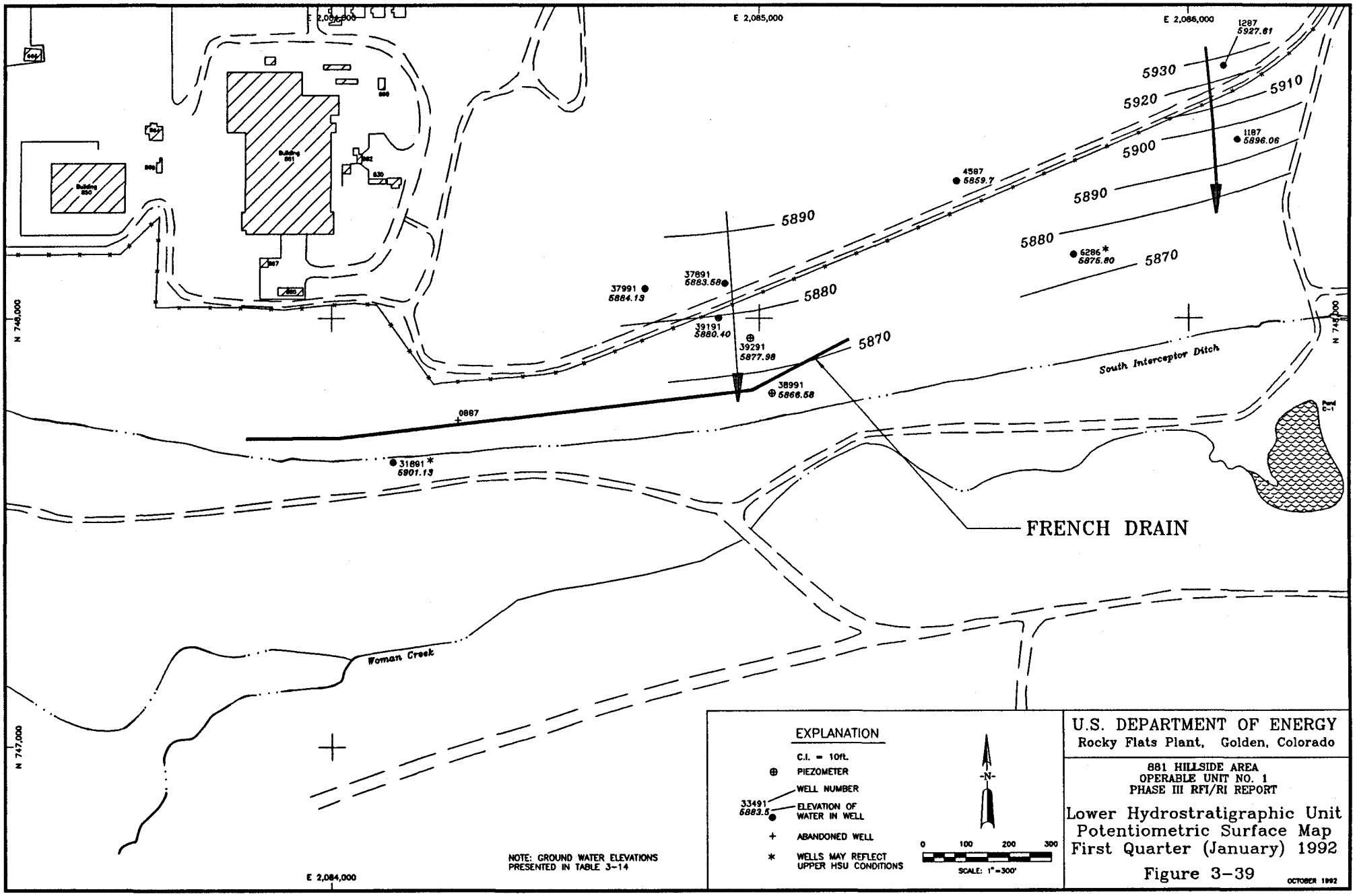
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

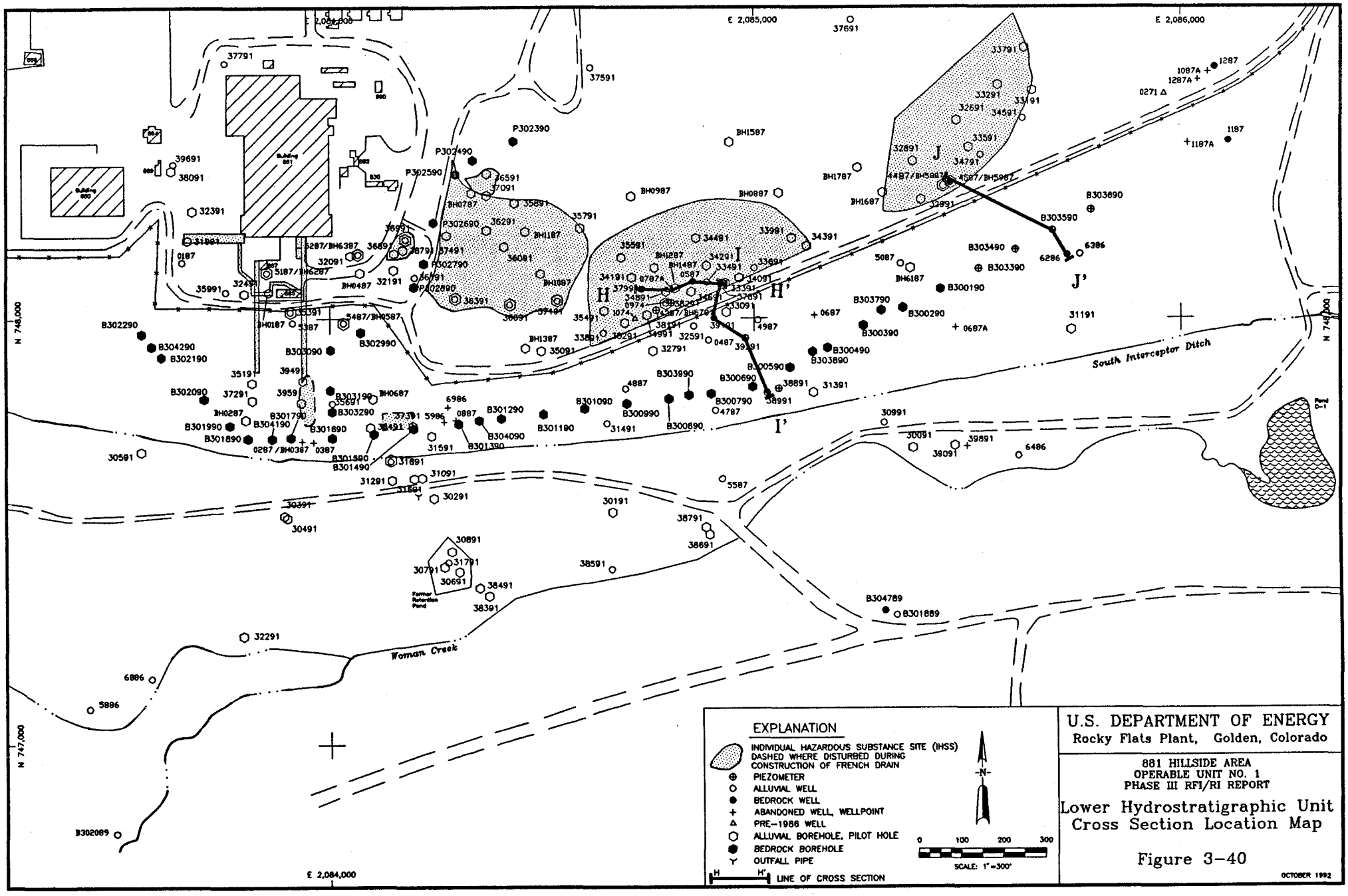
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Hydraulic Conductivities for Upper and Lower HSU Materials at OU1

Figure 3-38

OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 740,000
N 747,000
5930
5920
5910
5900
5890
5880
5870
1287
5927.61
1187
5896.06
4587
5859.7
6286*
5875.80
37991
5884.13
37891
5883.58
39191
5880.40
39291
5877.98
38991
5866.58
0887
31891*
5901.13
South Interceptor Ditch
Woman Creek
FRENCH DRAIN
EXPLANATION
C.I. = 10ft.
PIEZOMETER
WELL NUMBER
33491
5883.5
ELEVATION OF WATER IN WELL
ABANDONED WELL
WELLS MAY REFLECT UPPER HSU CONDITIONS
N
0 100 200 300
SCALE: 1"=300'
NOTE: GROUND WATER ELEVATIONS PRESENTED IN TABLE 3-14
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Lower Hydrostratigraphic Unit
Potentiometric Surface Map
First Quarter (January) 1992
Figure 3-39
OCTOBER 1992



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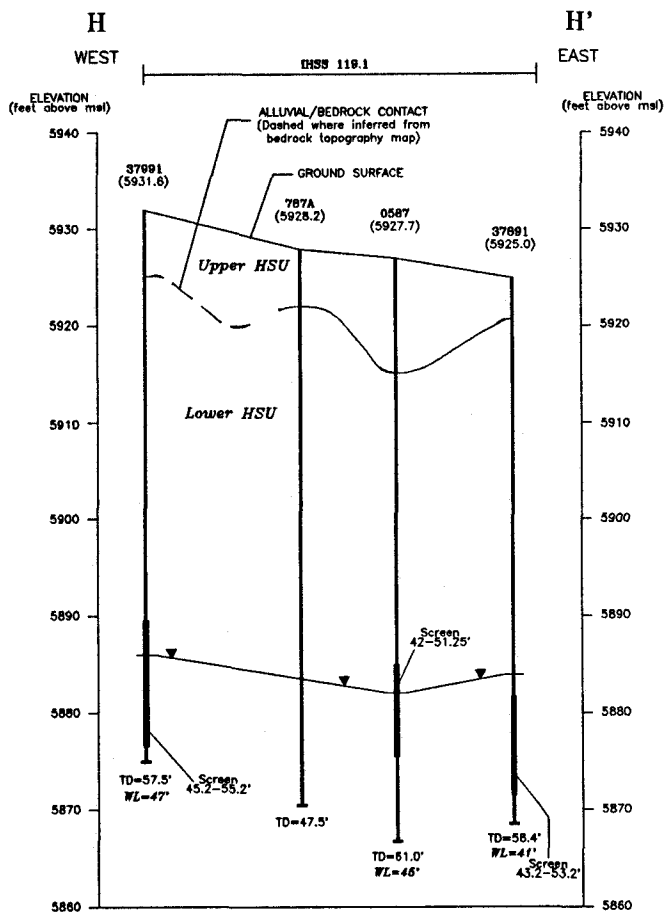
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

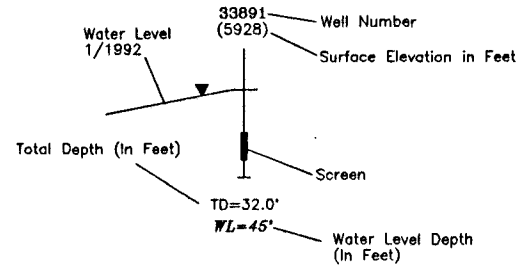
Lower Hydrostratigraphic Unit Cross Section Location Map

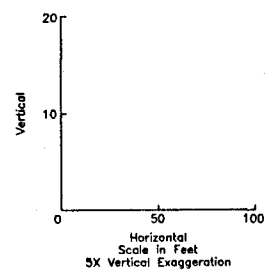
Figure 3-40

OCTOBER 1992



EXPLANATION





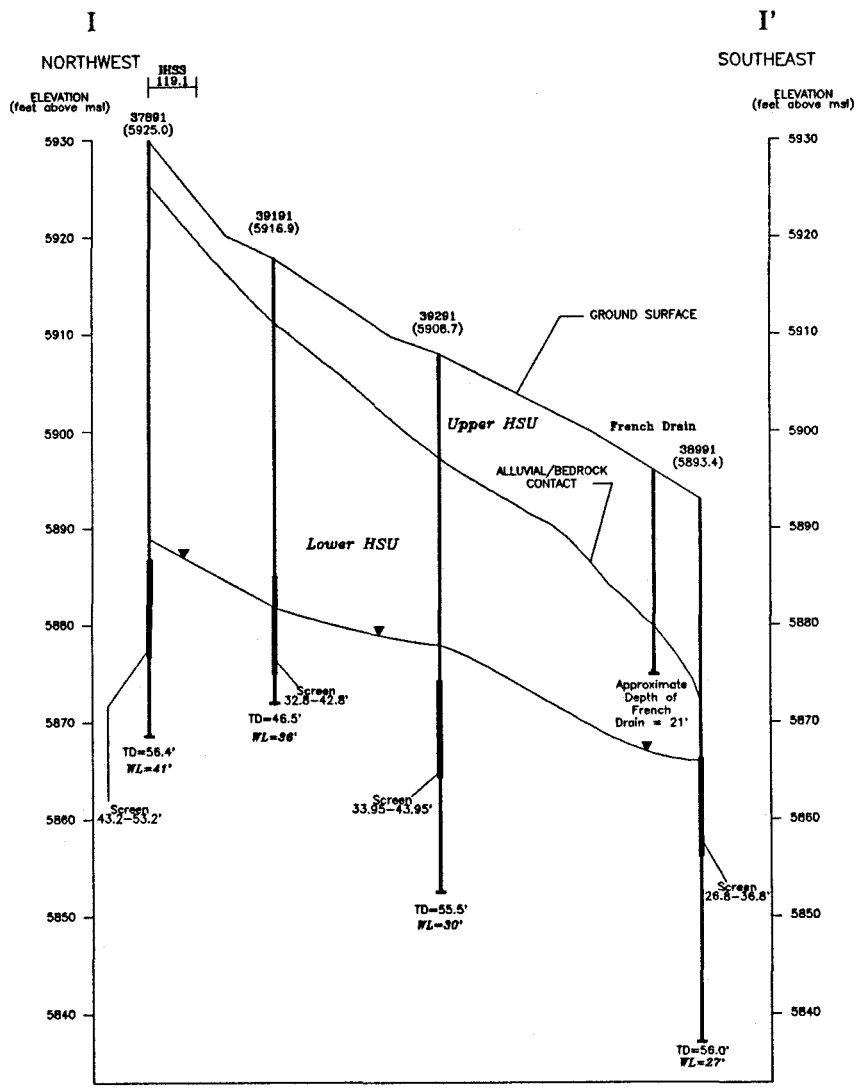
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

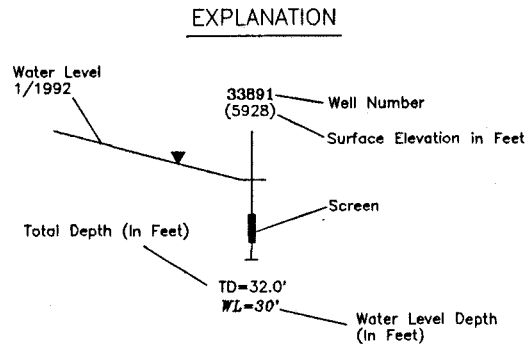
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

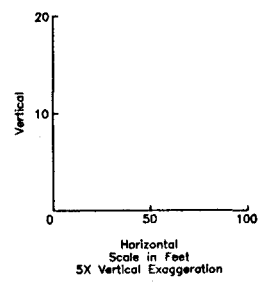
Lower Hydrostratigraphic Unit
Cross Section H-H'

Figure 3-41

OCTOBER 1992







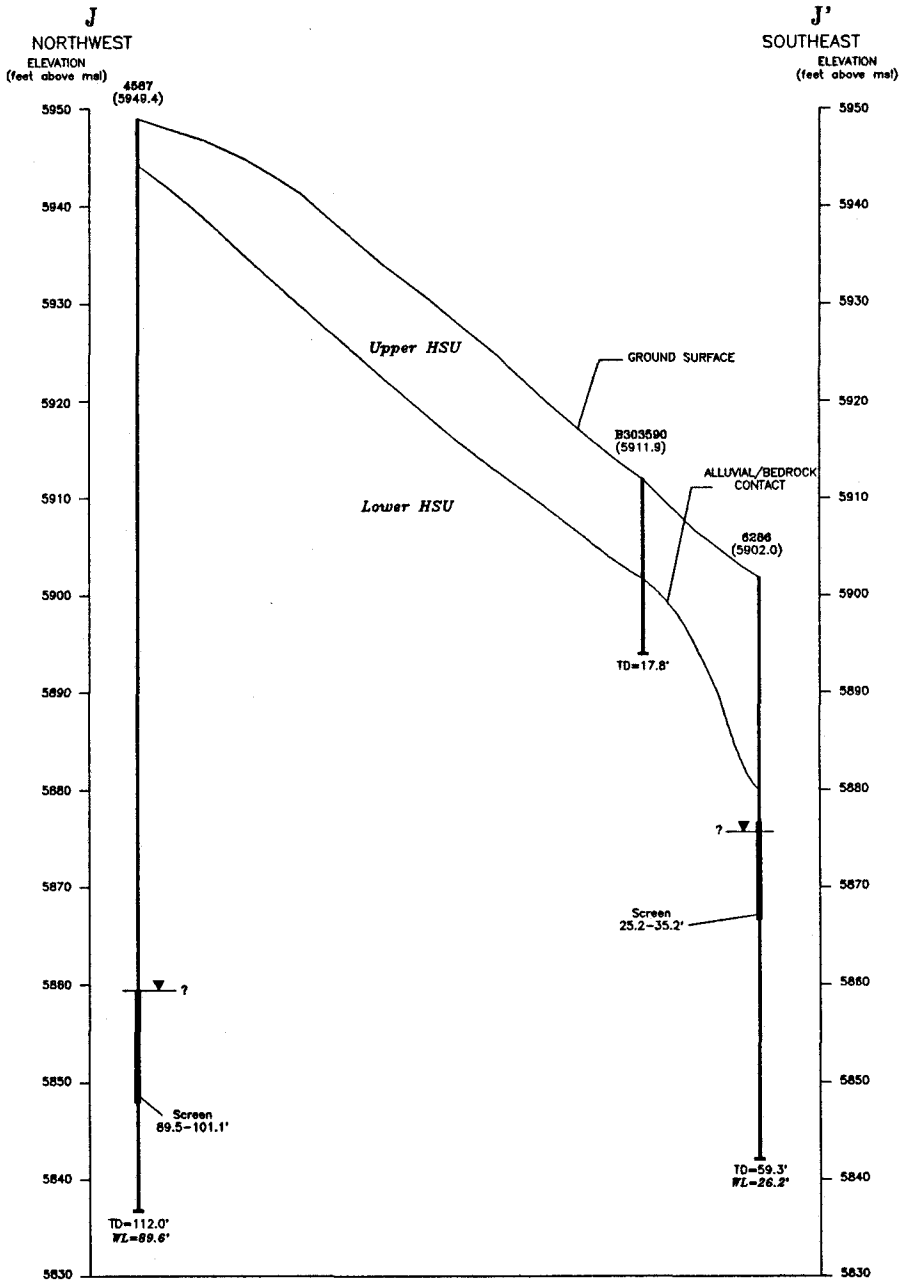
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

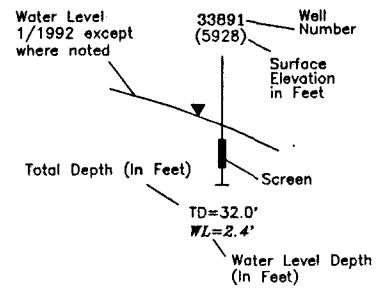
Lower Hydrostratigraphic Unit
Cross Section I–I'

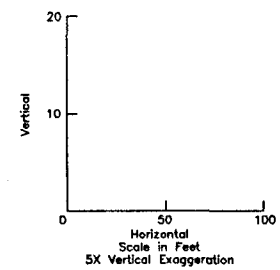
Figure 3-42

OCTOBER 1992



EXPLANATION





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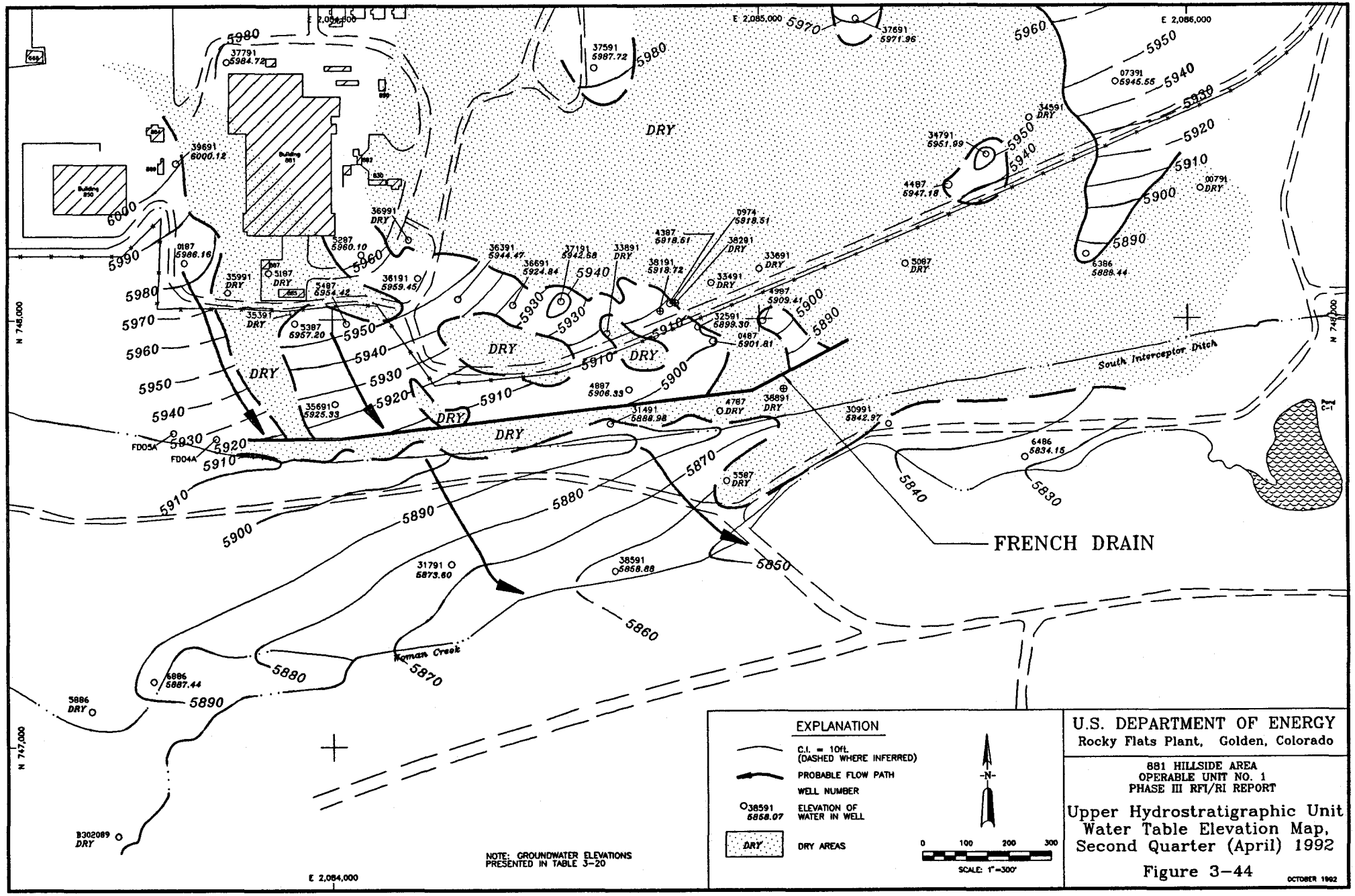
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Lower Hydrostratigraphic Unit
Cross Section J-J'

Figure 3-43

OCTOBER 1992



U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Upper Hydrostratigraphic Unit Water Table Elevation Map, Second Quarter (April) 1992

Figure 3-44

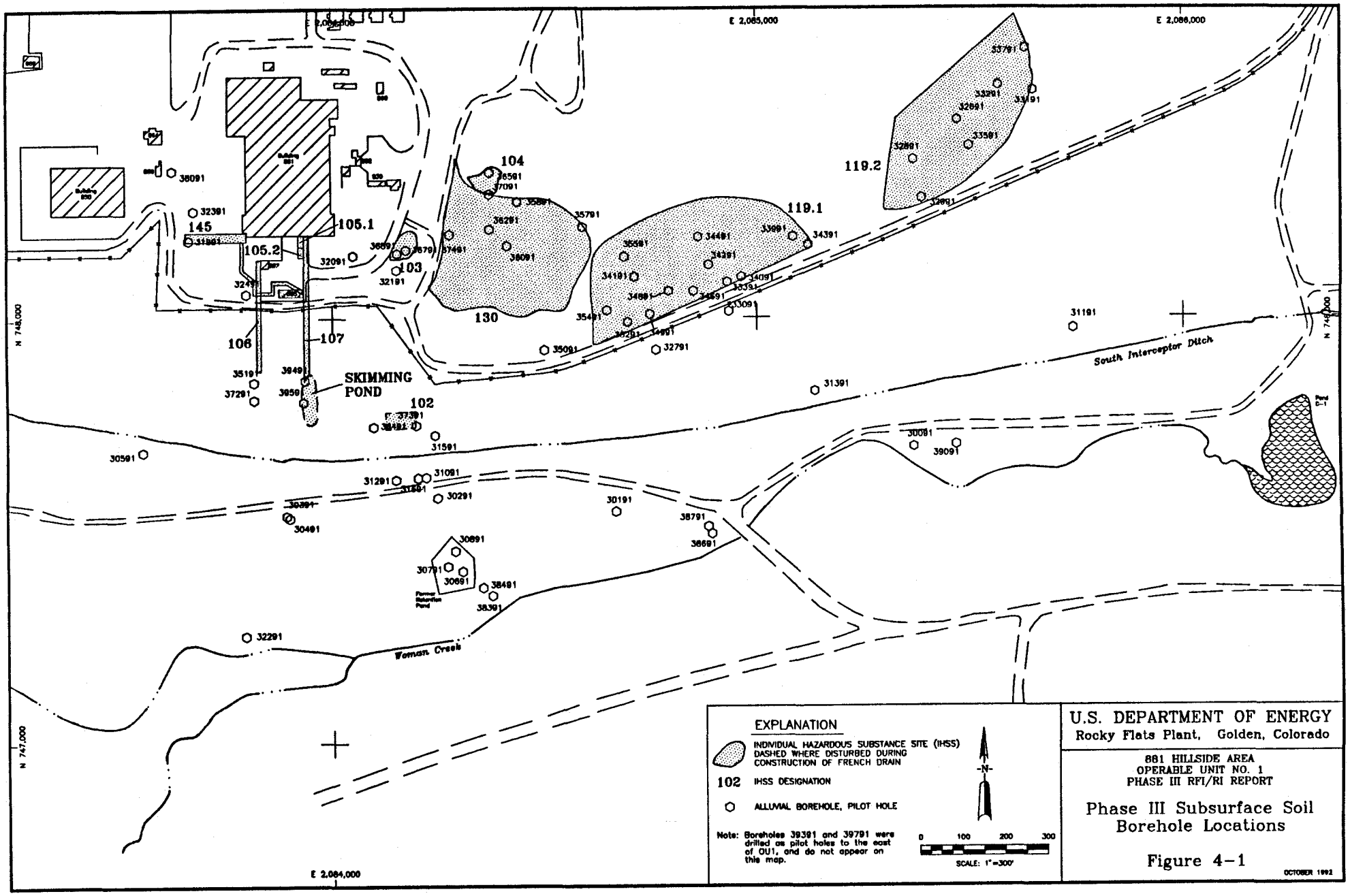
OCTOBER 1992

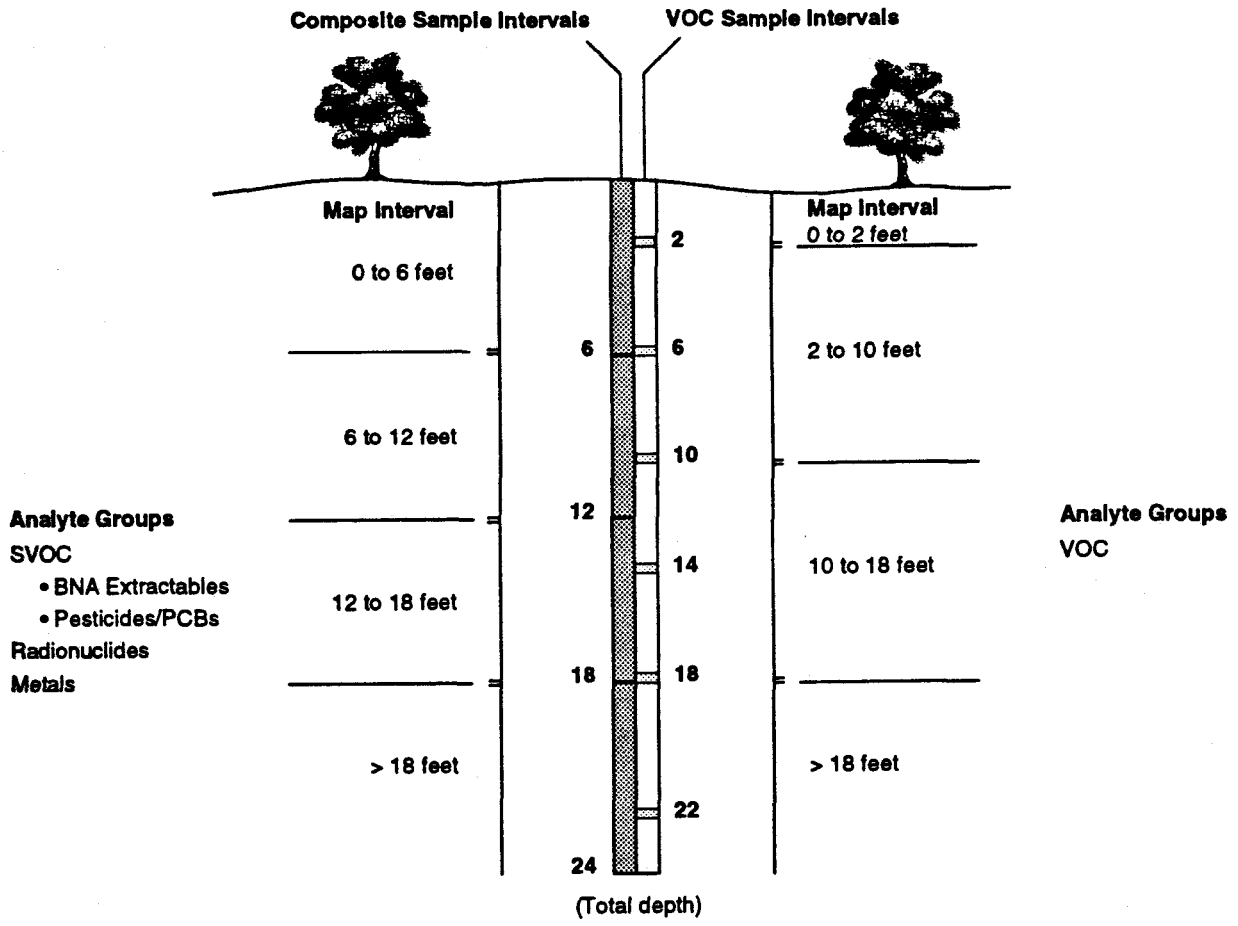
Section 4.0 · Figures

Nature and Extent of Contamination

Phase III RFI/RI Report

U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881
1 OU1 OU1
side 881 Hill
U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
145
105.1
105.2
106
107
103
104
130
119.1
119.2
102
SKIMMING POND
South Interceptor Ditch
Woman Creek
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
ALLUVIAL BOREHOLE, PILOT HOLE
Note: Boreholes 39391 and 39791 were drilled as pilot holes to the east of OU1, and do not appear on this map.
-N-
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Phase III Subsurface Soil Borehole Locations
Figure 4-1
OCTOBER 1992



Explanation

VOC Samples
Composite Samples

Note: Borehole total depths varied between locations (see Section 2.0 of this report)

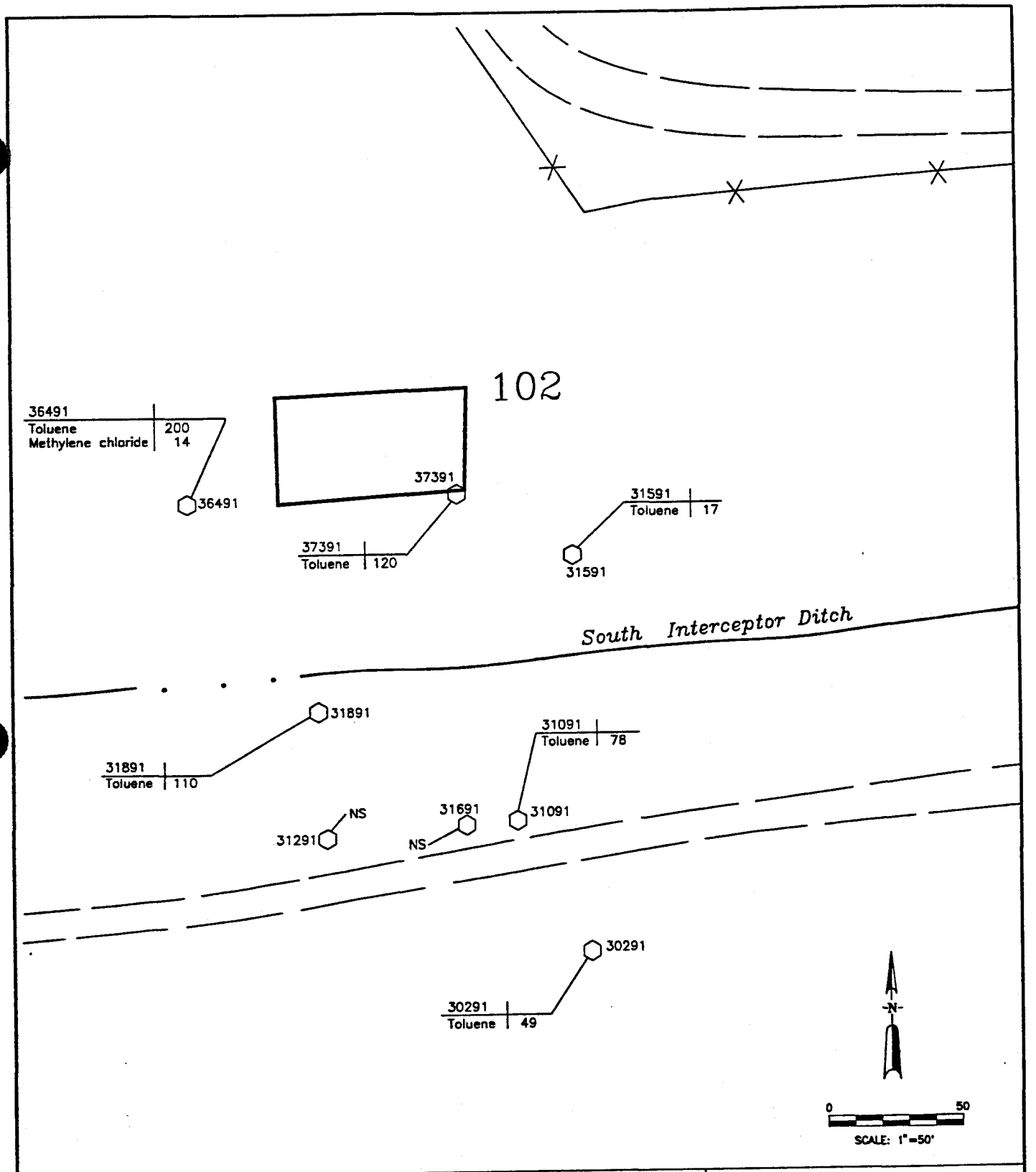
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Phase III
Subsurface Soil Sampling Profile

Figure 4-2

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

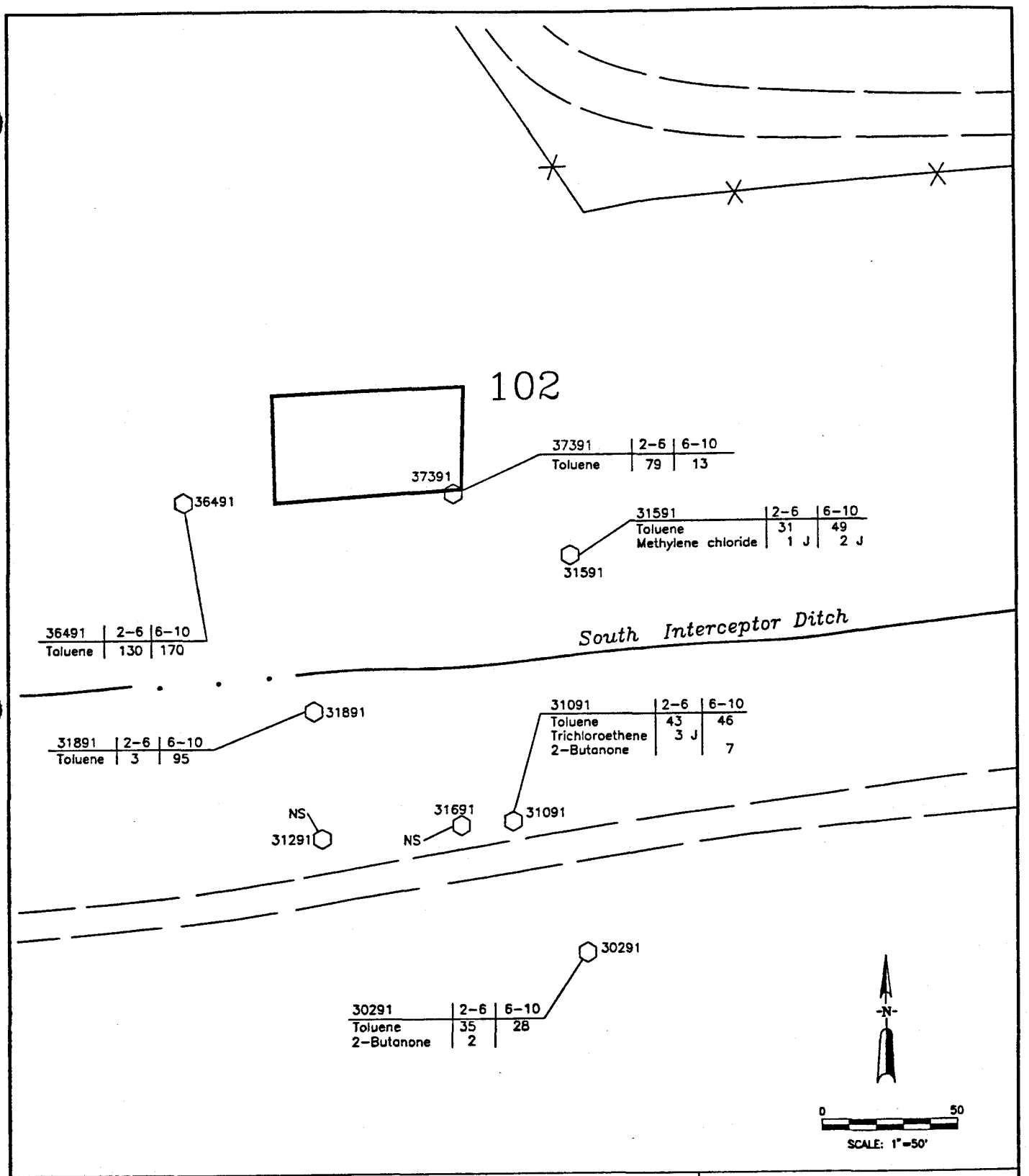
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 102, 0 to 2 Feet

Figure 4-3

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

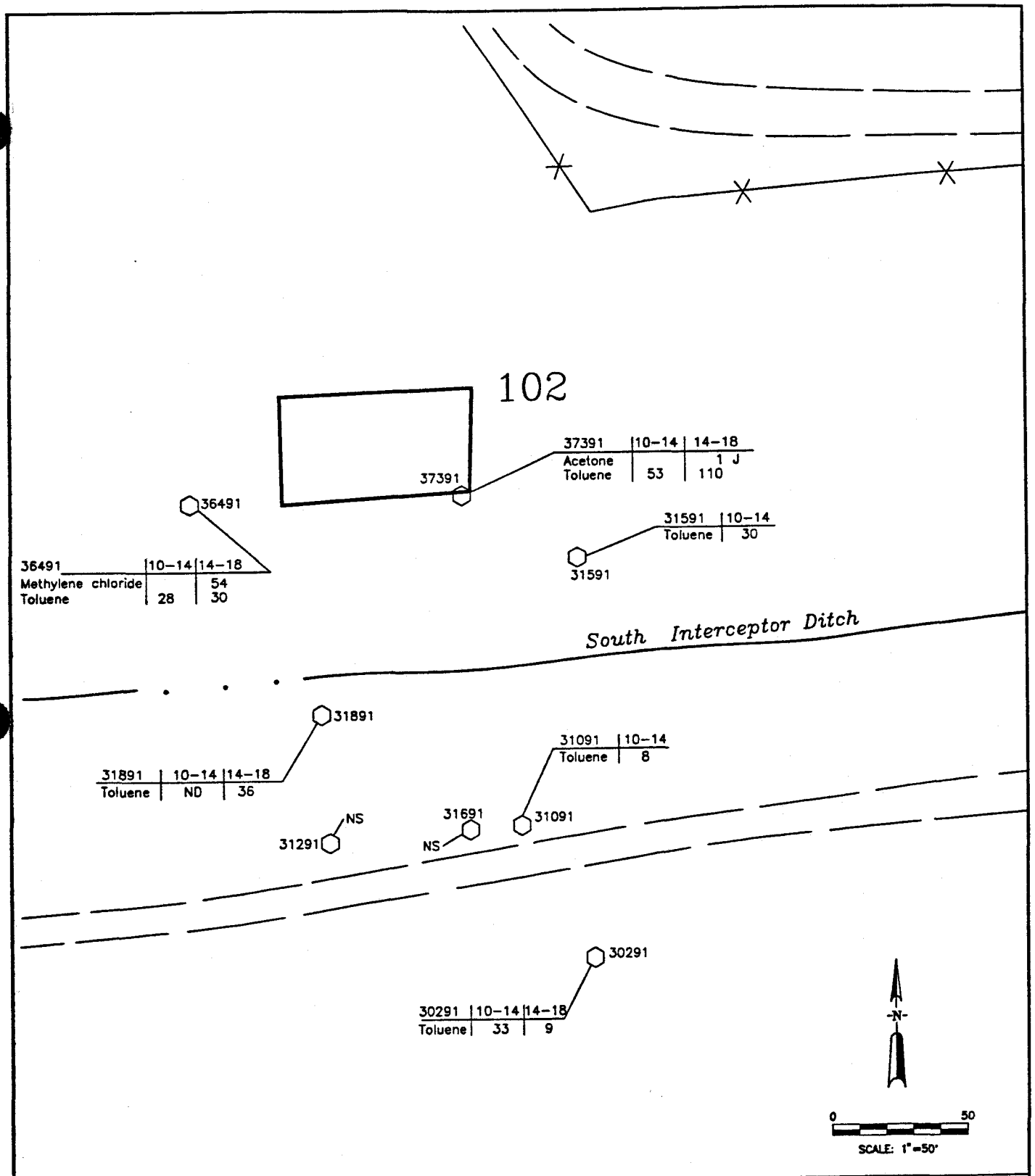
NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 102, 2 to 10 Feet
Figure 4-4

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

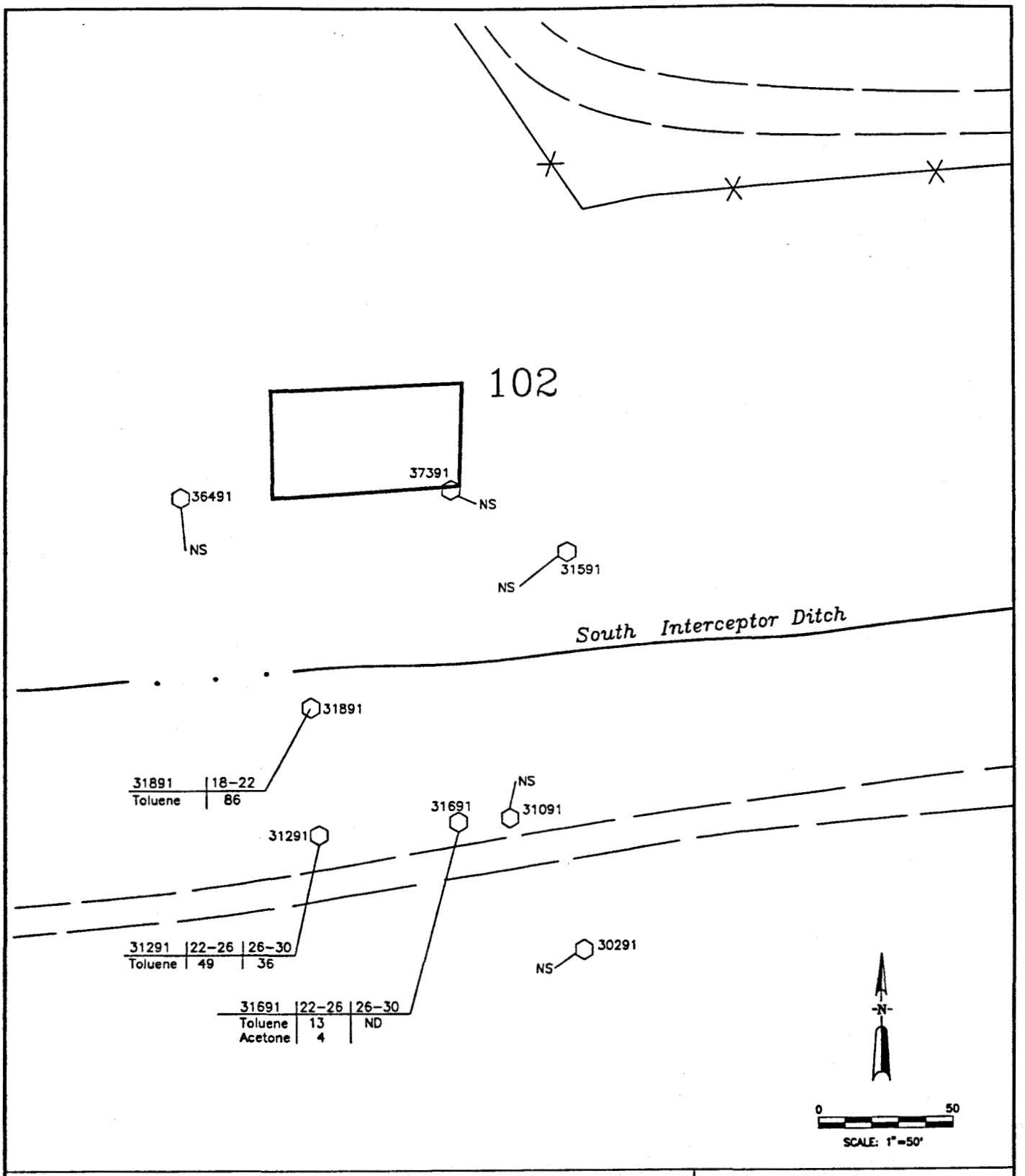
NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 102, 10 to 18 Feet
Figure 4–5

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

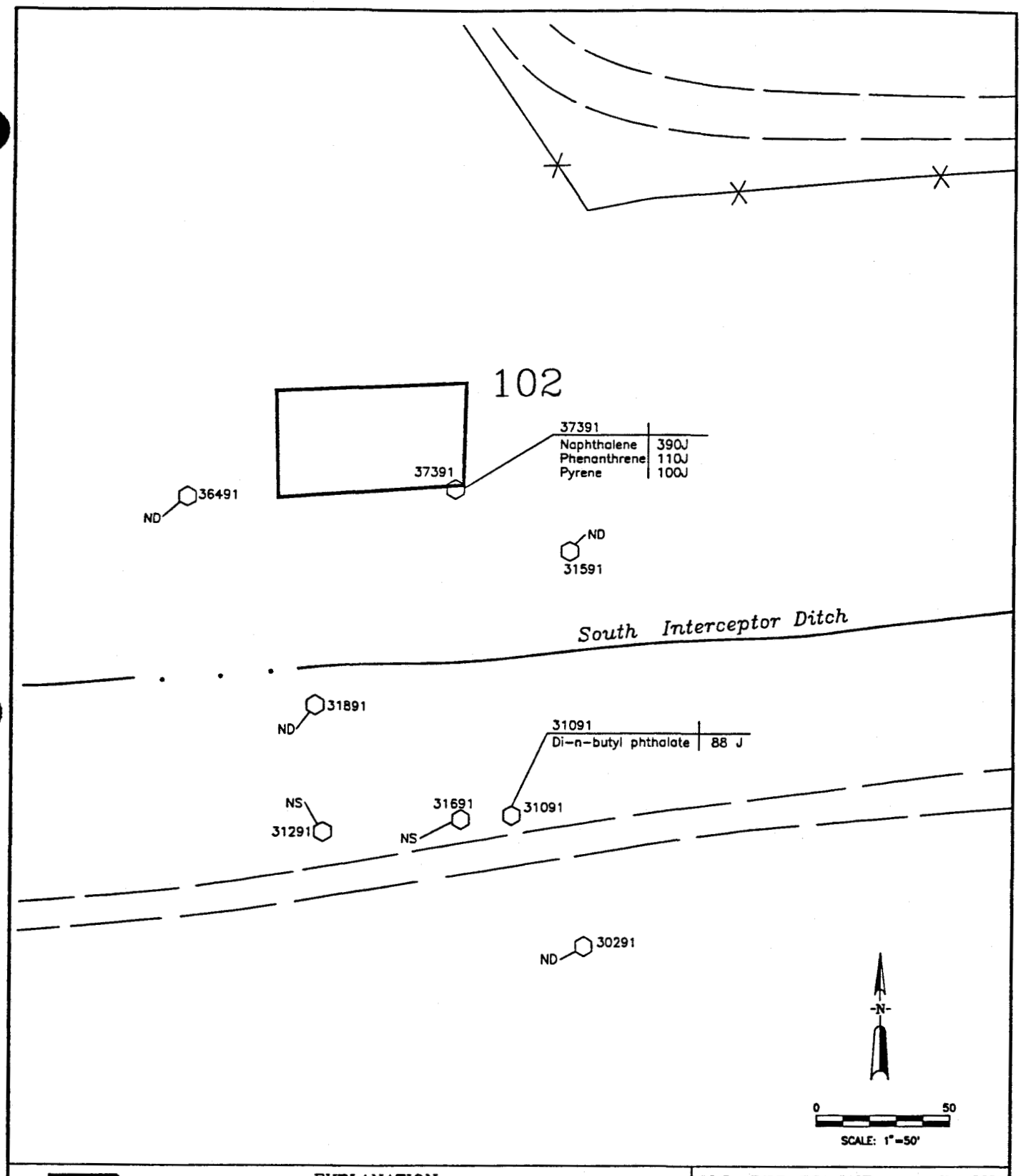
NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 102, Greater Than 18 Feet
Figure 4–6

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

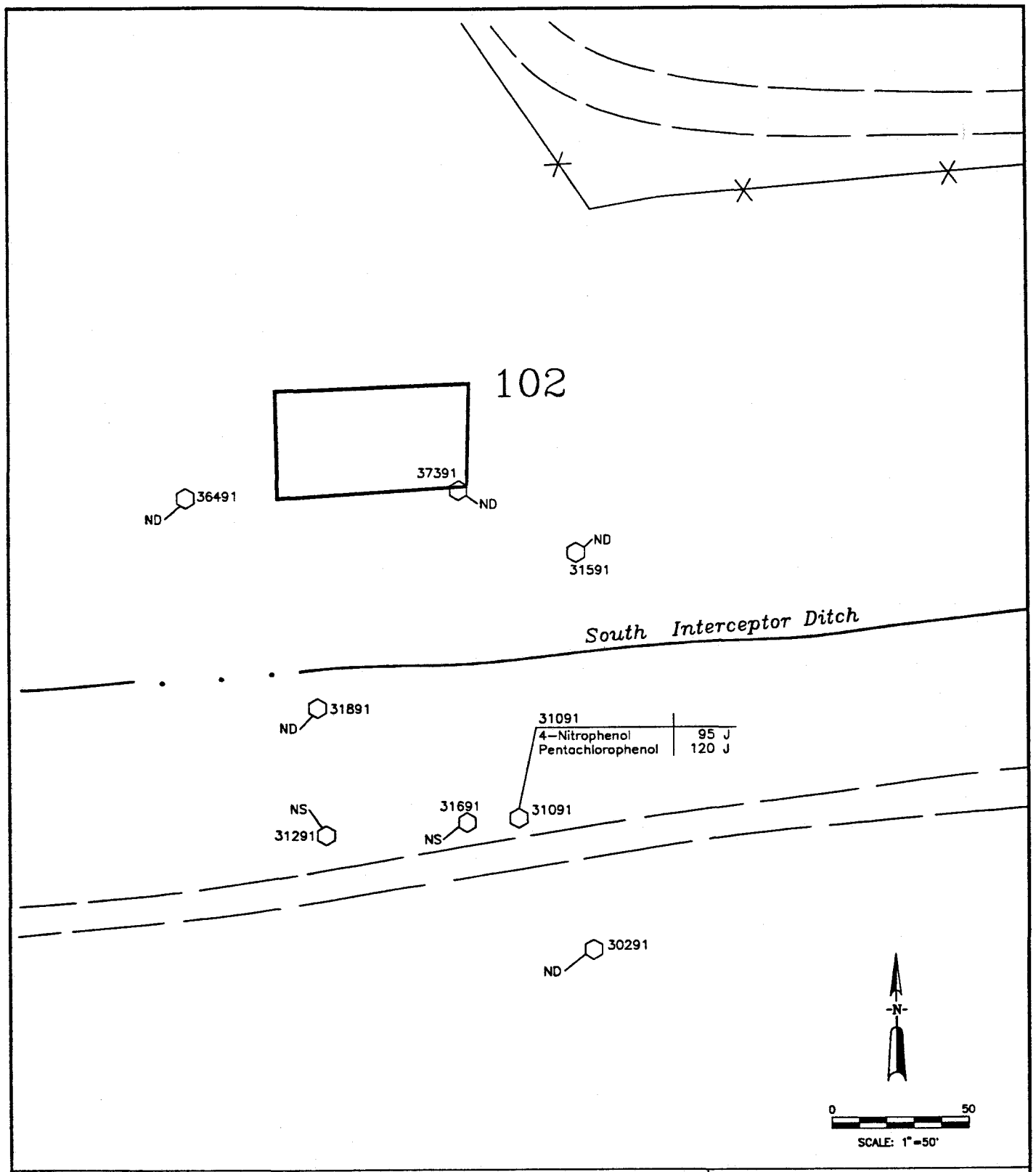
NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 102, 0 to 6 Feet
Figure 4-7

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location 36491 | 6-10 Depth Interval in Feet

Analyte Pyrene | 2.0 Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

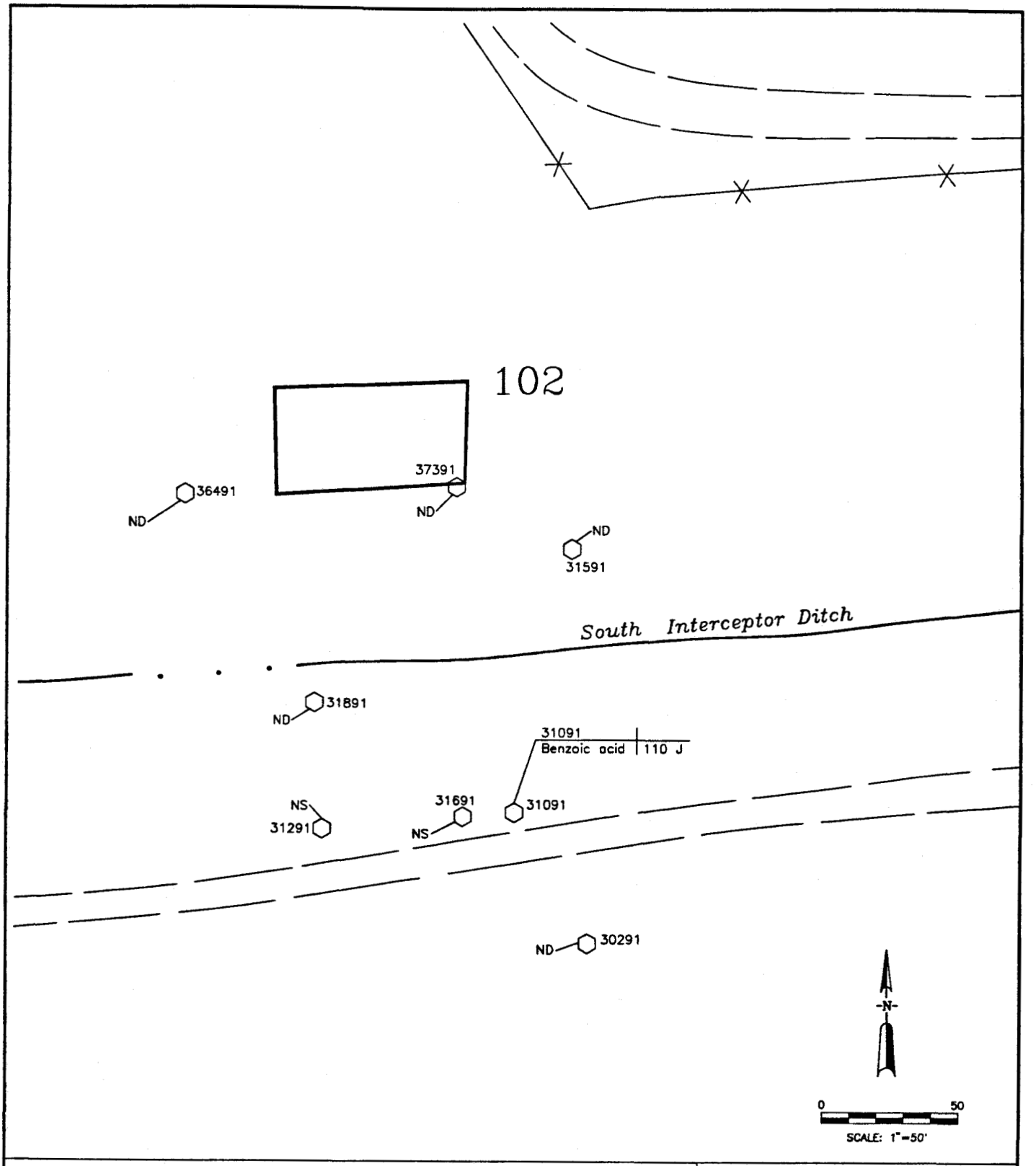
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 102, 6 to 12 Feet

Figure 4-8

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

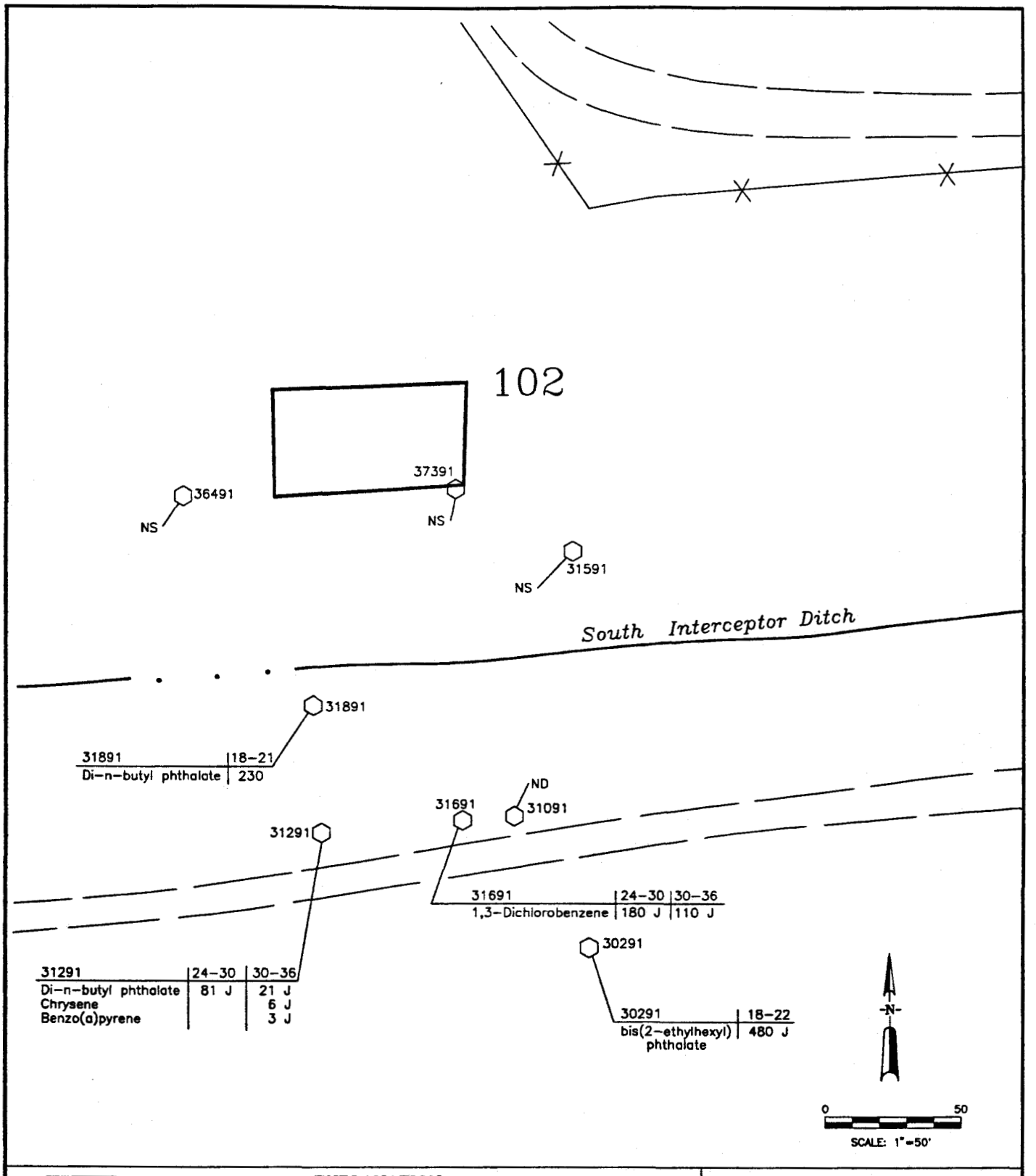
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 102, 12 to 18 Feet

Figure 4-9

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

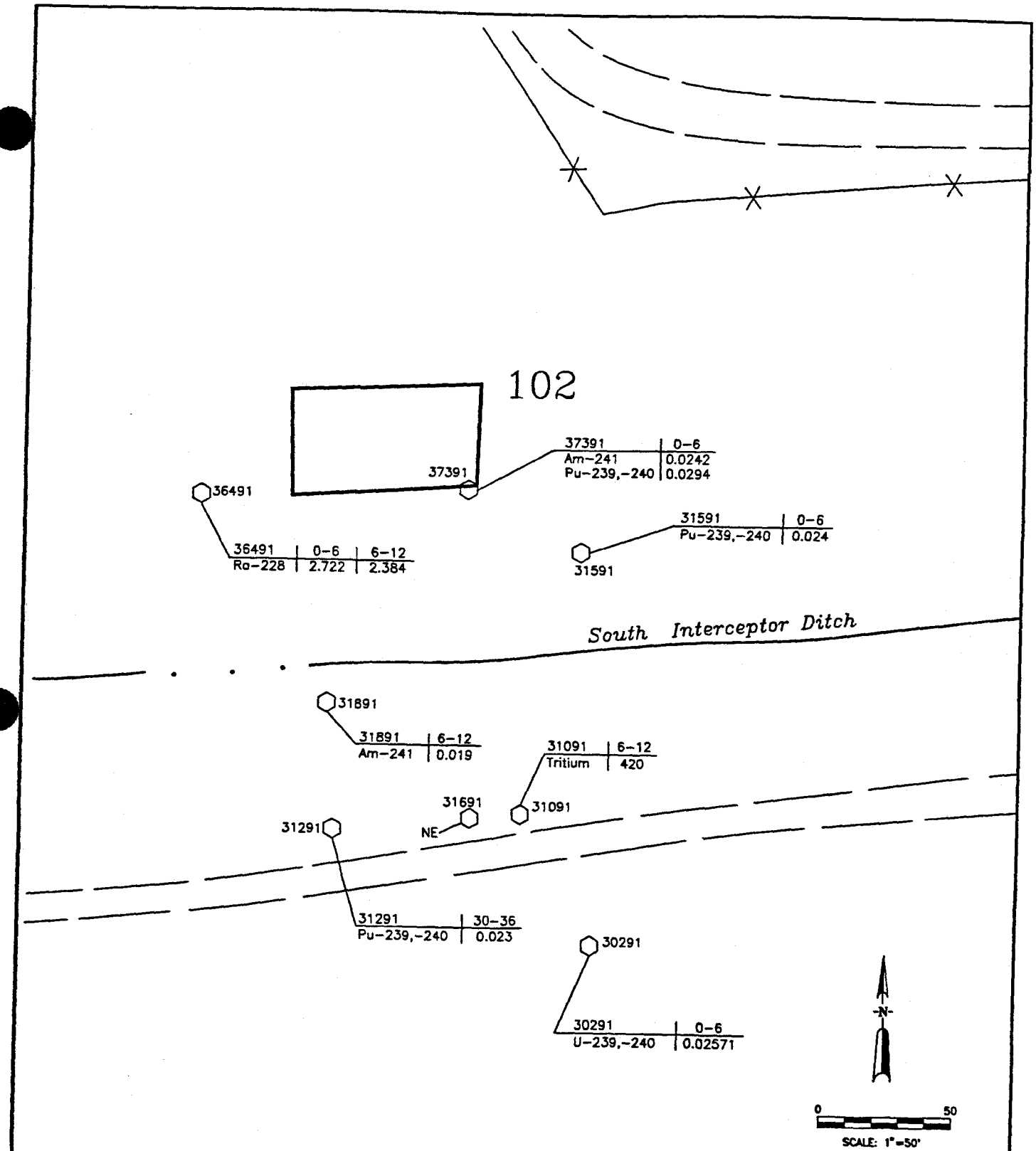
NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 102, Greater Than 18 Feet
Figure 4–10

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE-Analytes Do Not Exceed Background
NS-Location Not Sampled

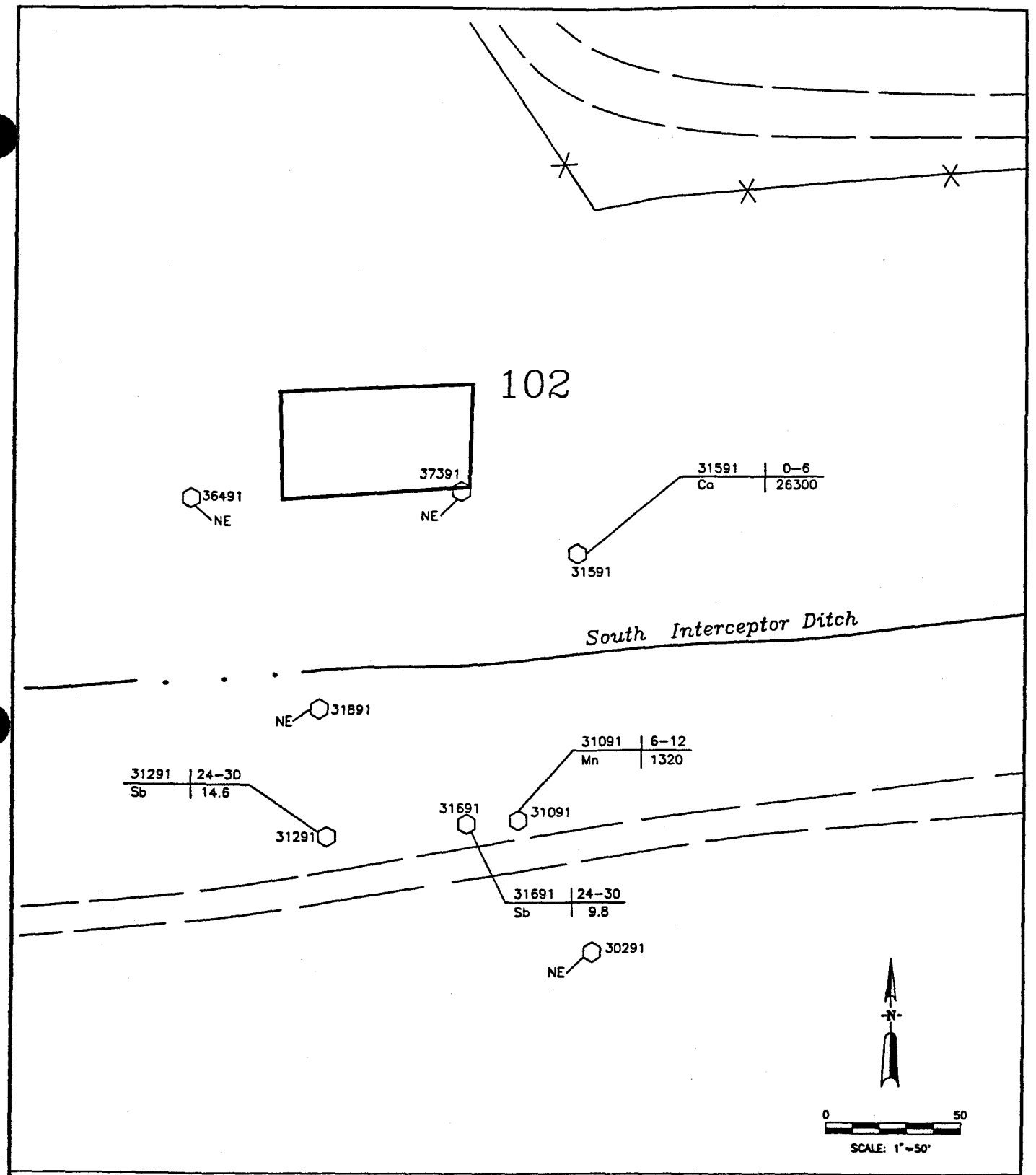
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at IHSS 102

Figure 4-11

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Ca | 40 — Concentration in milligrams per kilogram (mg/kg)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

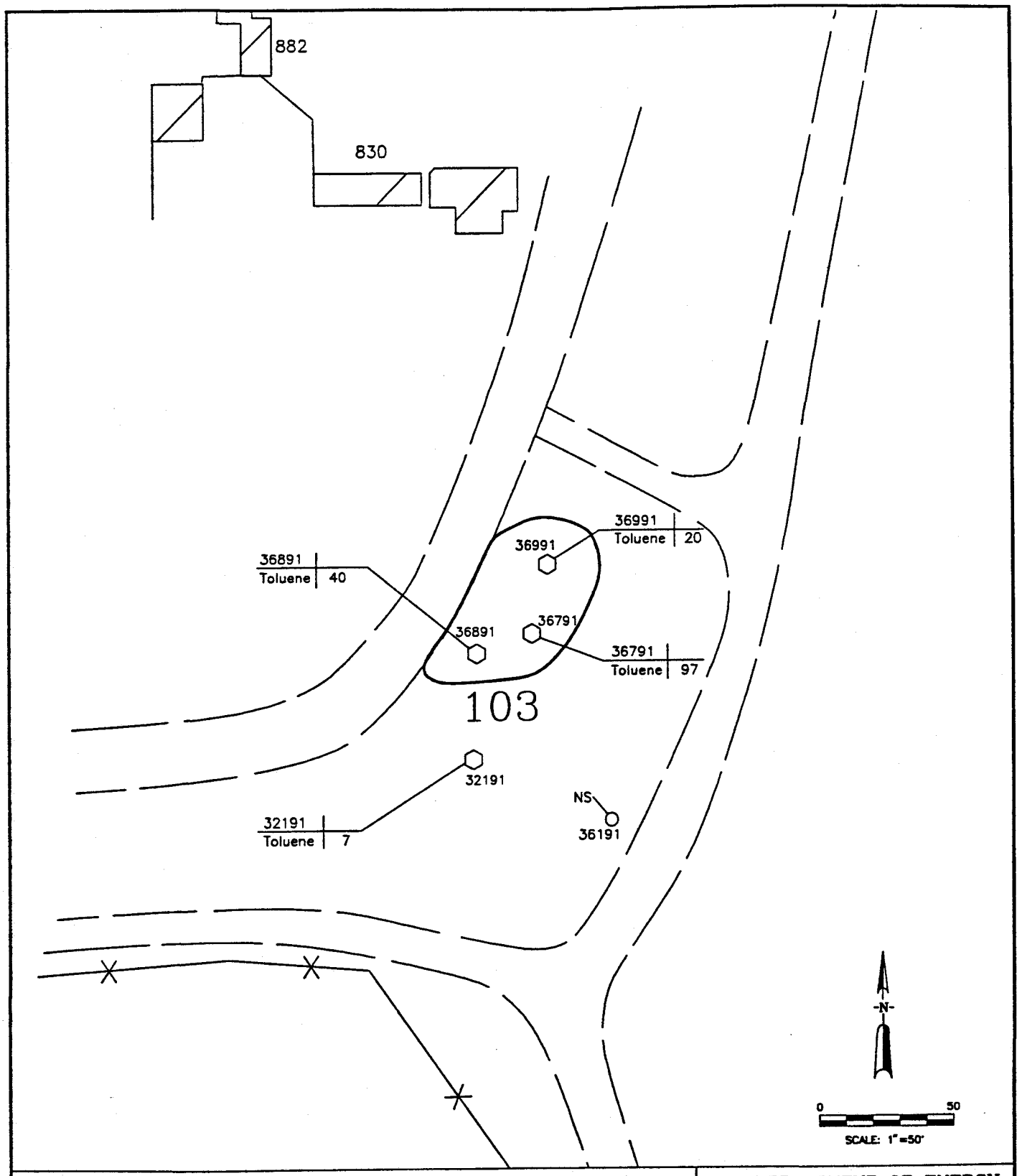
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils at IHSS 102

Figure 4-12

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

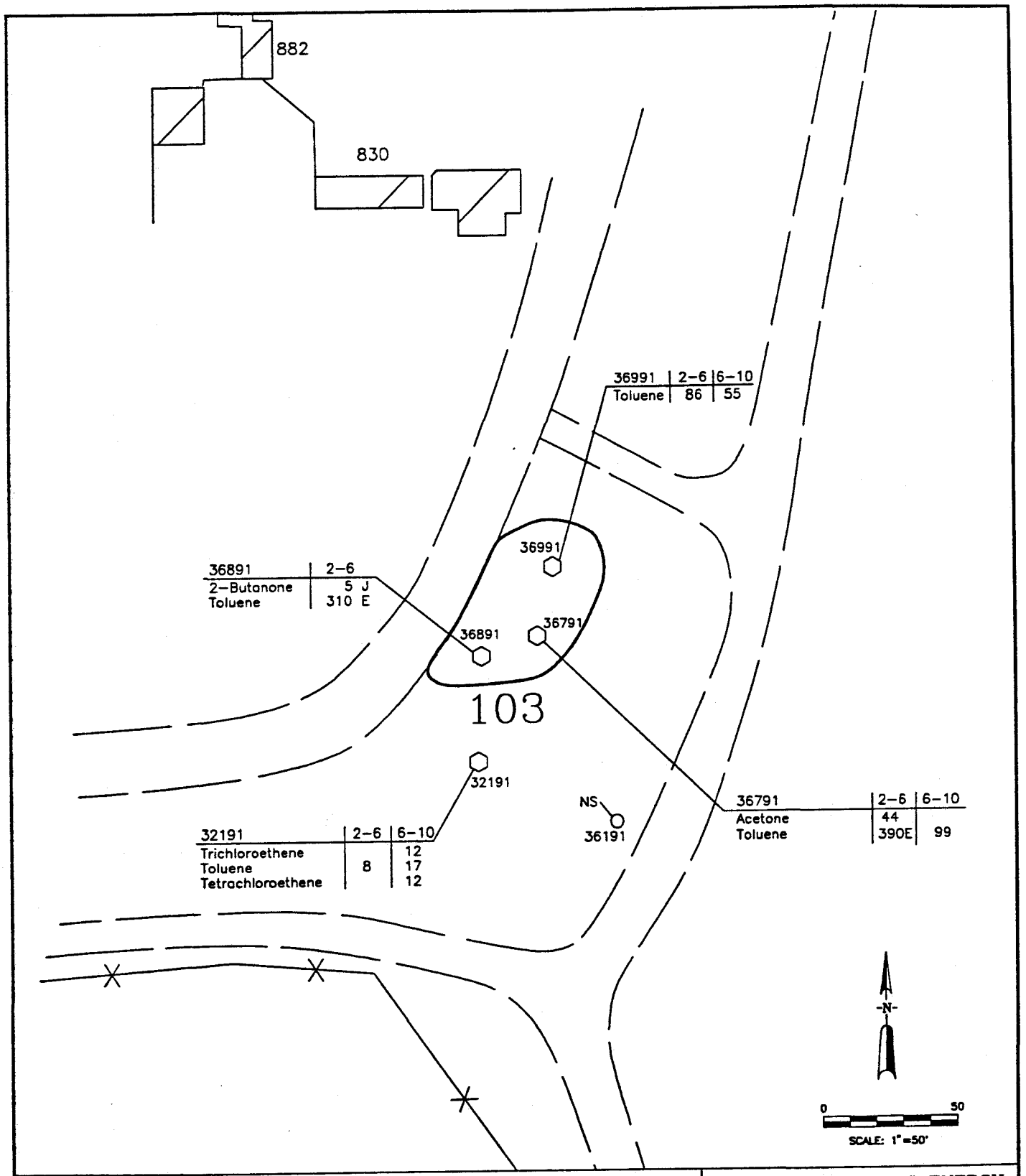
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 103, 0 to 2 Feet

Figure 4-13

OCTOBER 1992



EXPLANATION

IHSS Boundary

Soil Sample Location
31891 Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet
Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

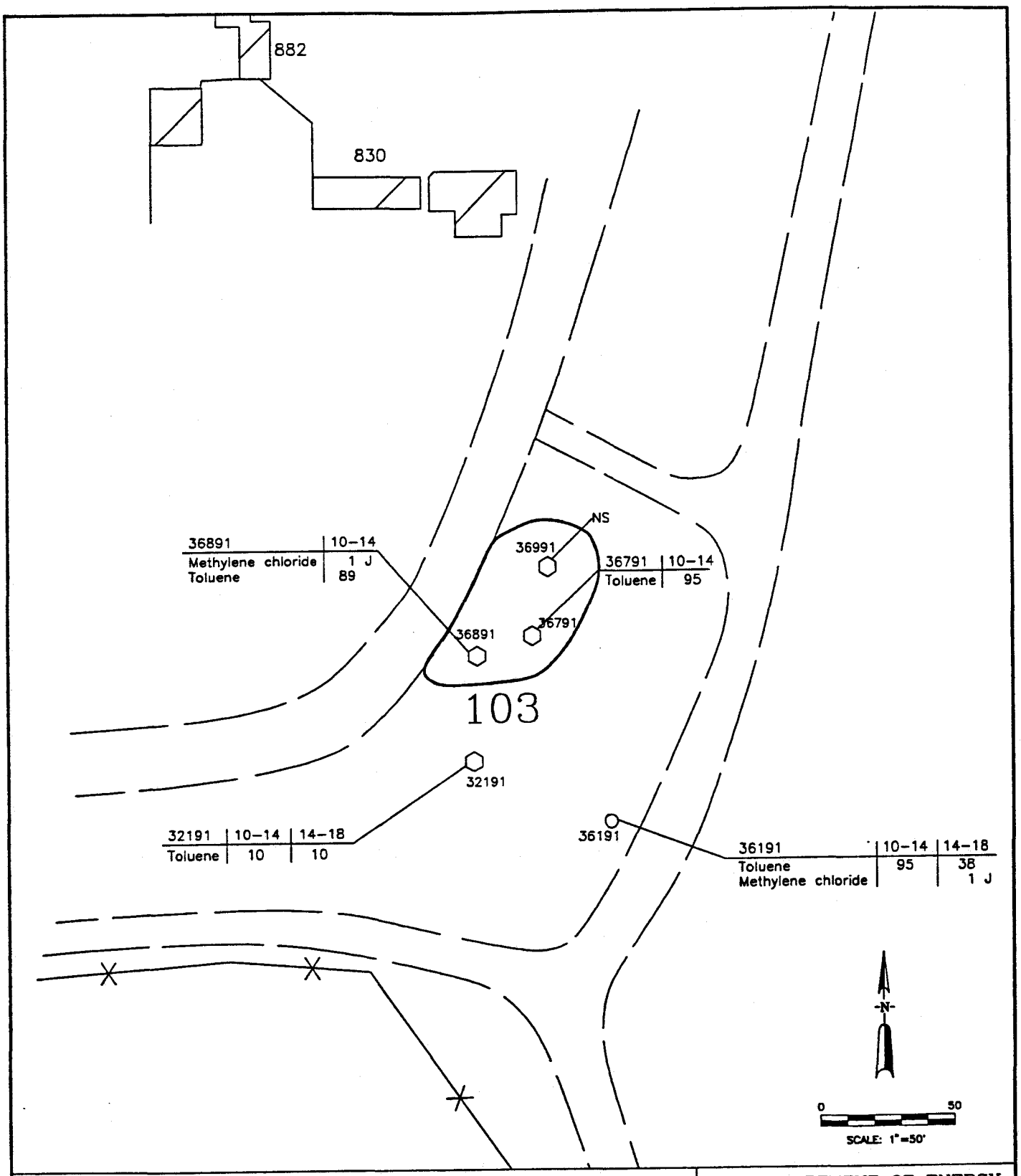
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 103, 2 to 10 Feet

Figure 4-14

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

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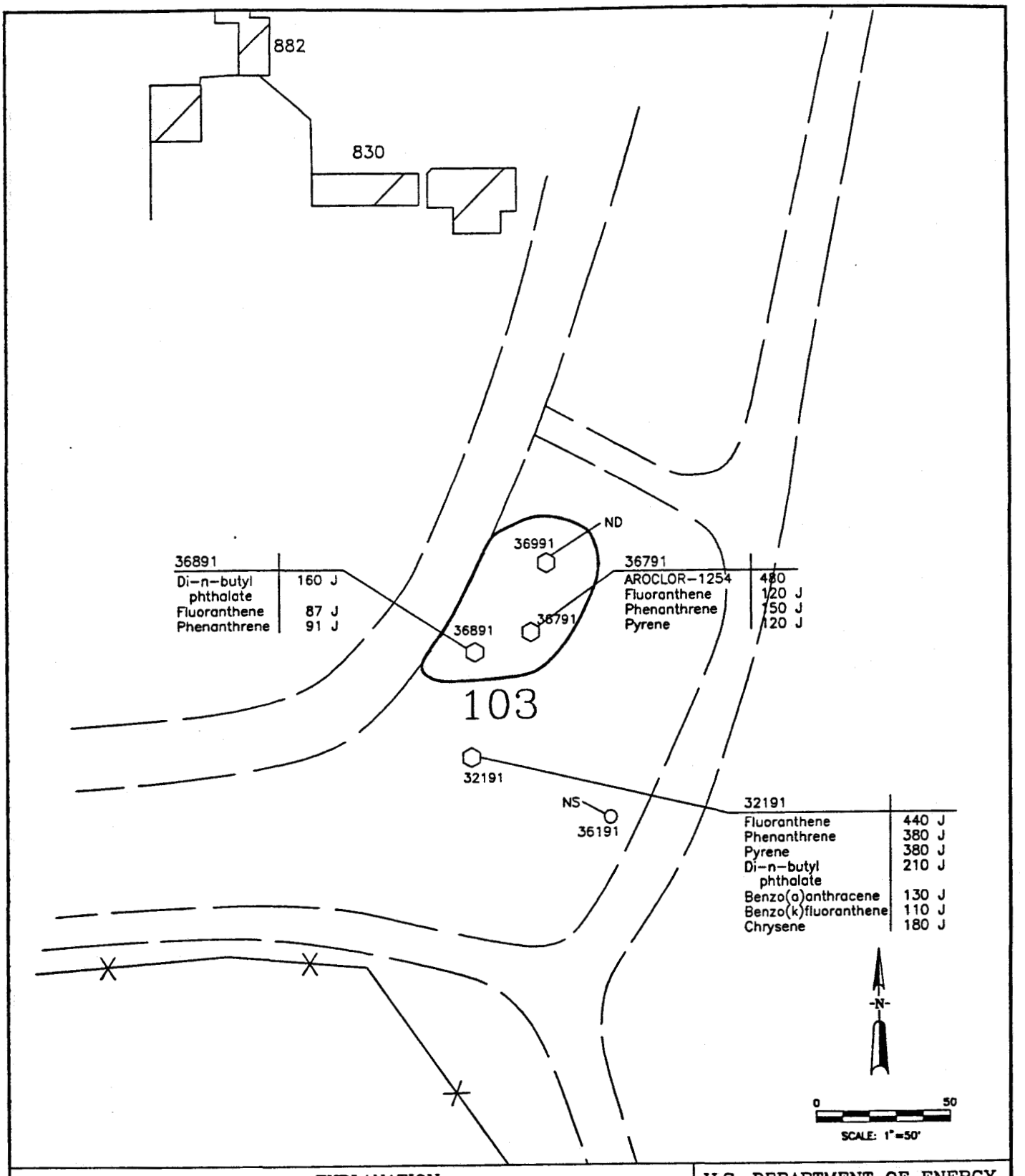
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 103, 10 to 18 Feet

Figure 4-15

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

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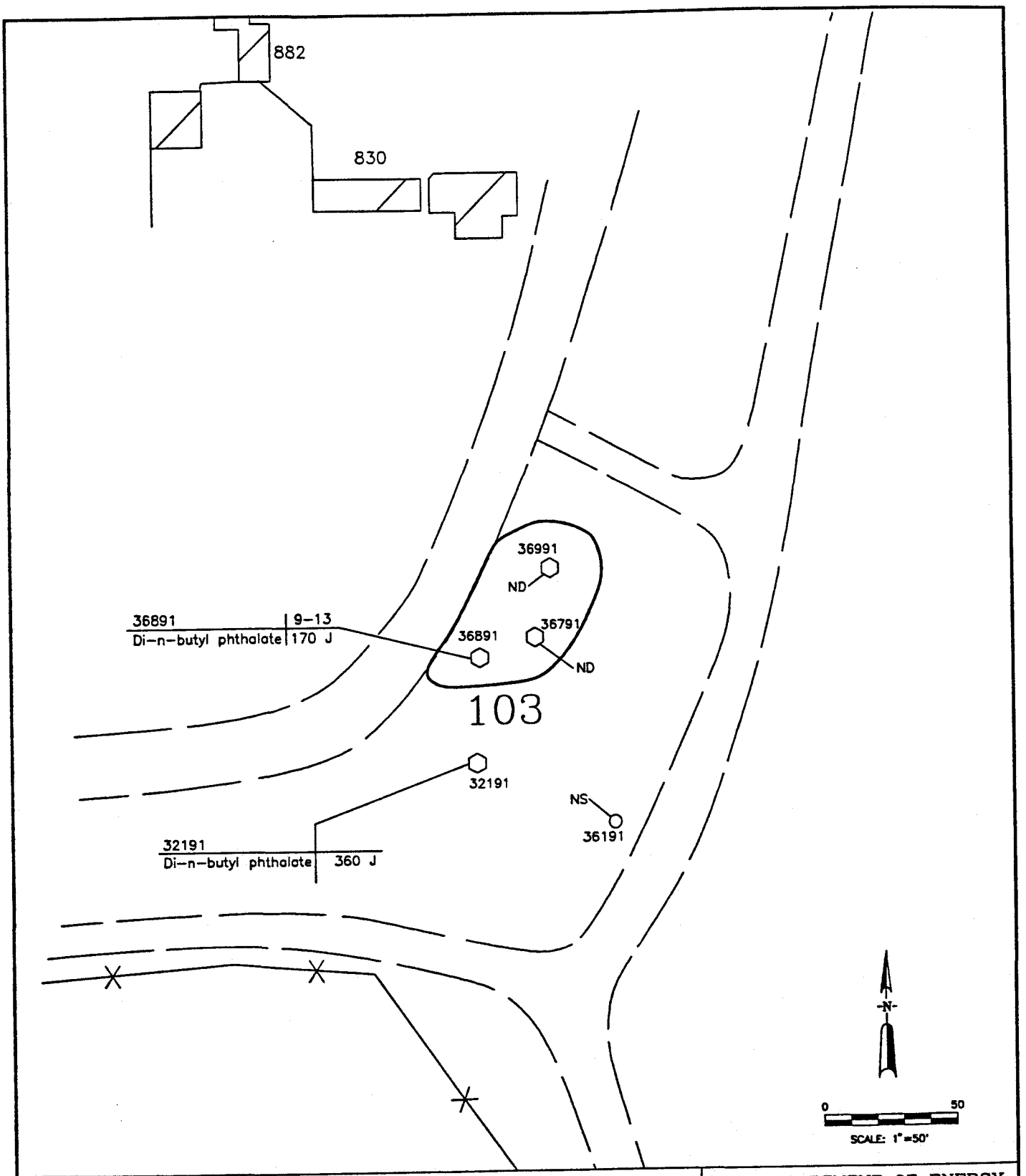
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 103, 0 to 6 Feet

Figure 4-16

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
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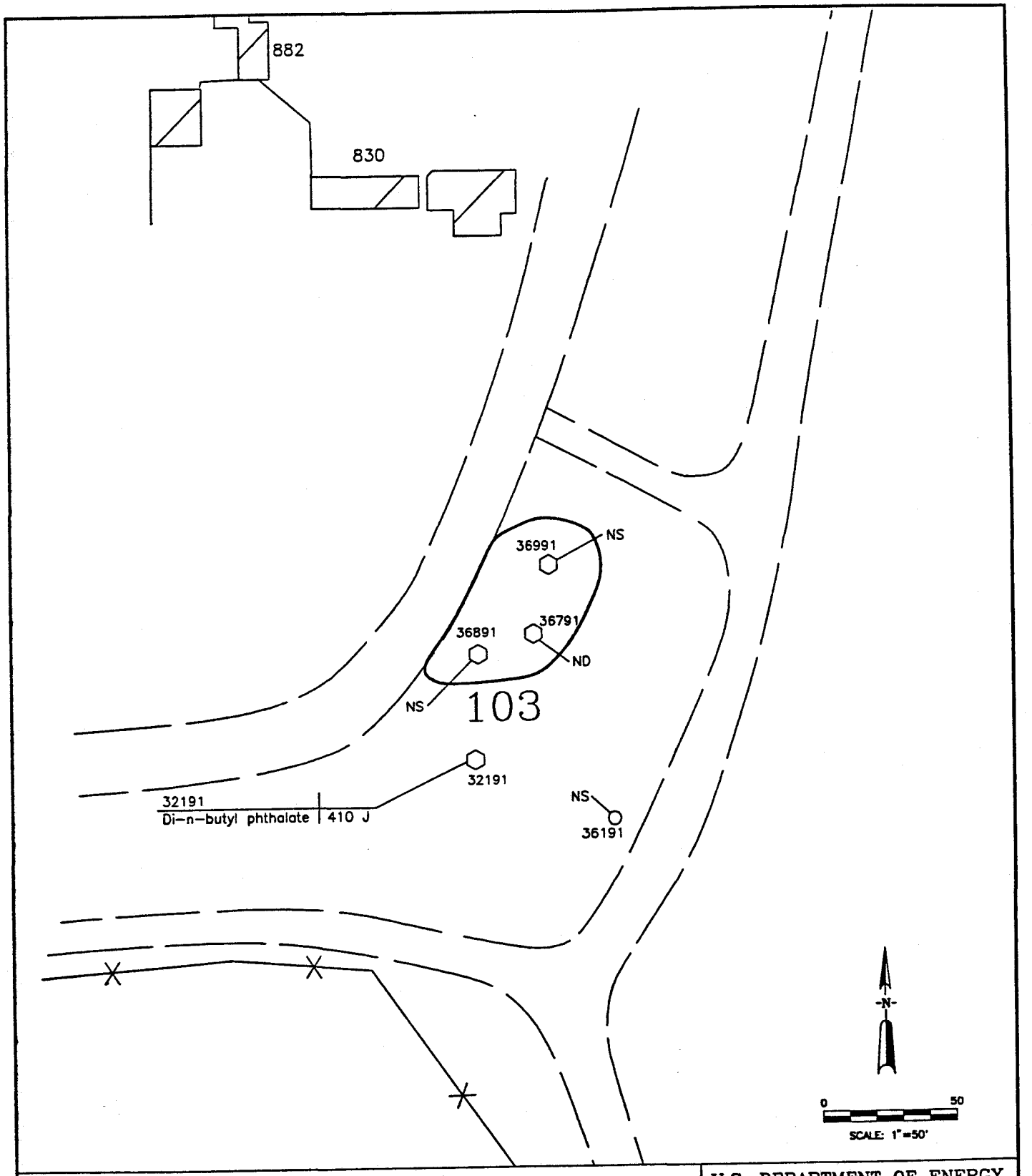
Semivolatile Organic Compounds Detected in IHSS 103, 6 to 12 Feet

Figure 4–17

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

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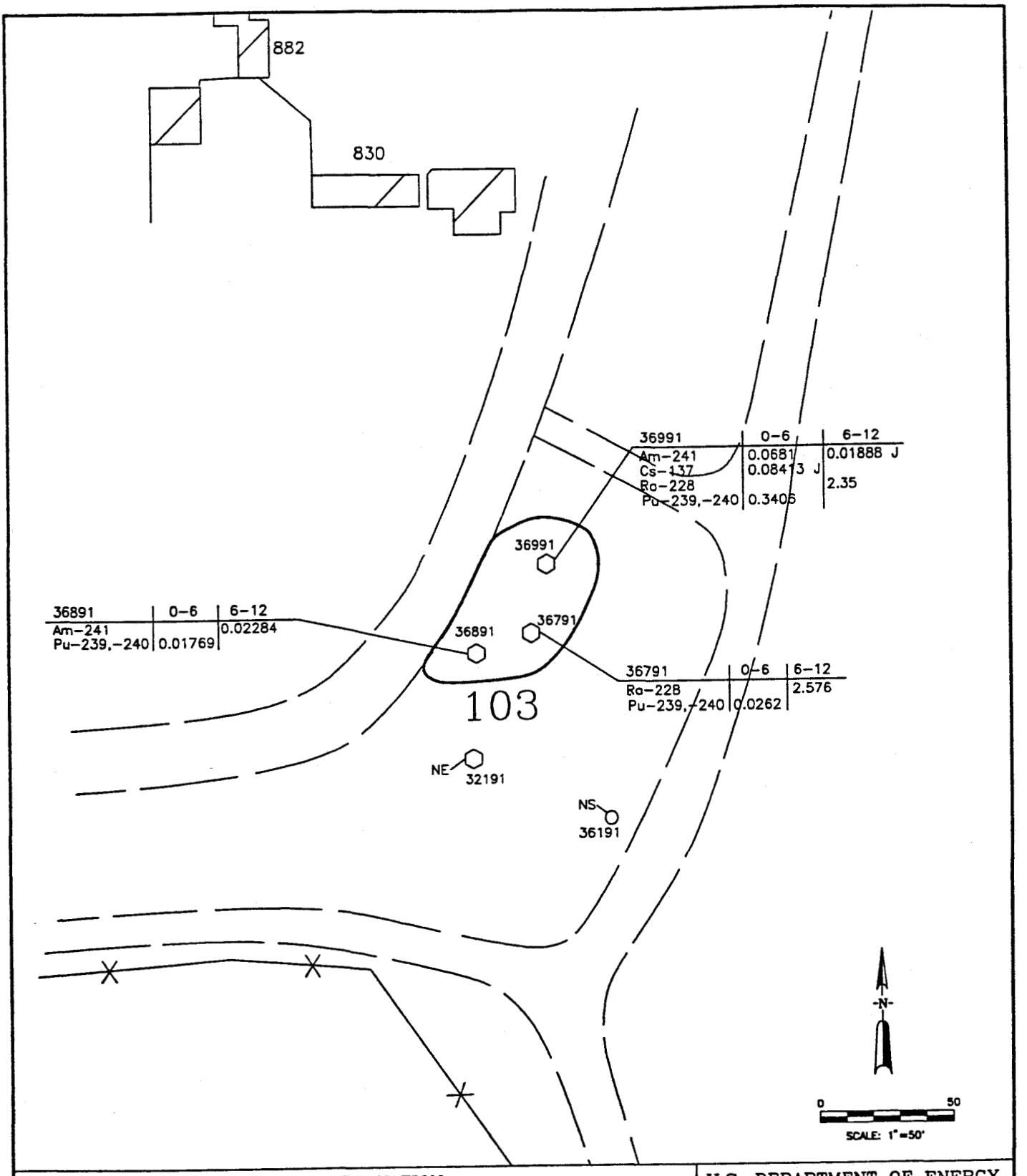
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 103, 12 to 18 Feet

Figure 4-18

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE-Analytes Do Not Exceed Background
NS-Location Not Sampled

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Rocky Flats Plant Golden, Colorado

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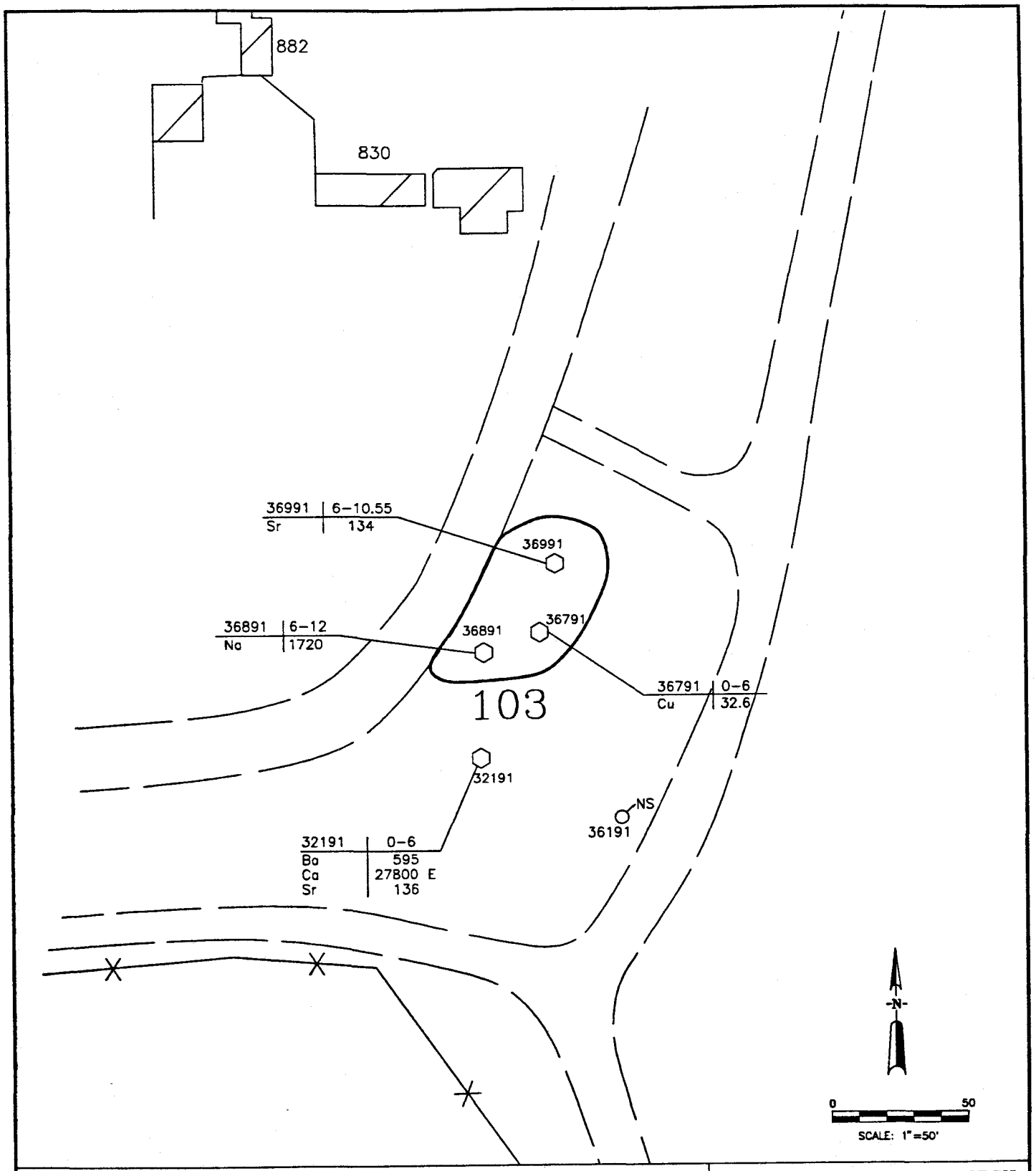
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at IHSS 103

Figure 4-19

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

36191 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Ca | 40 — Concentration in milligrams per kilogram (mg/kg)

NE—Analytes Do Not Exceed Background
NS—Location Not Sampled

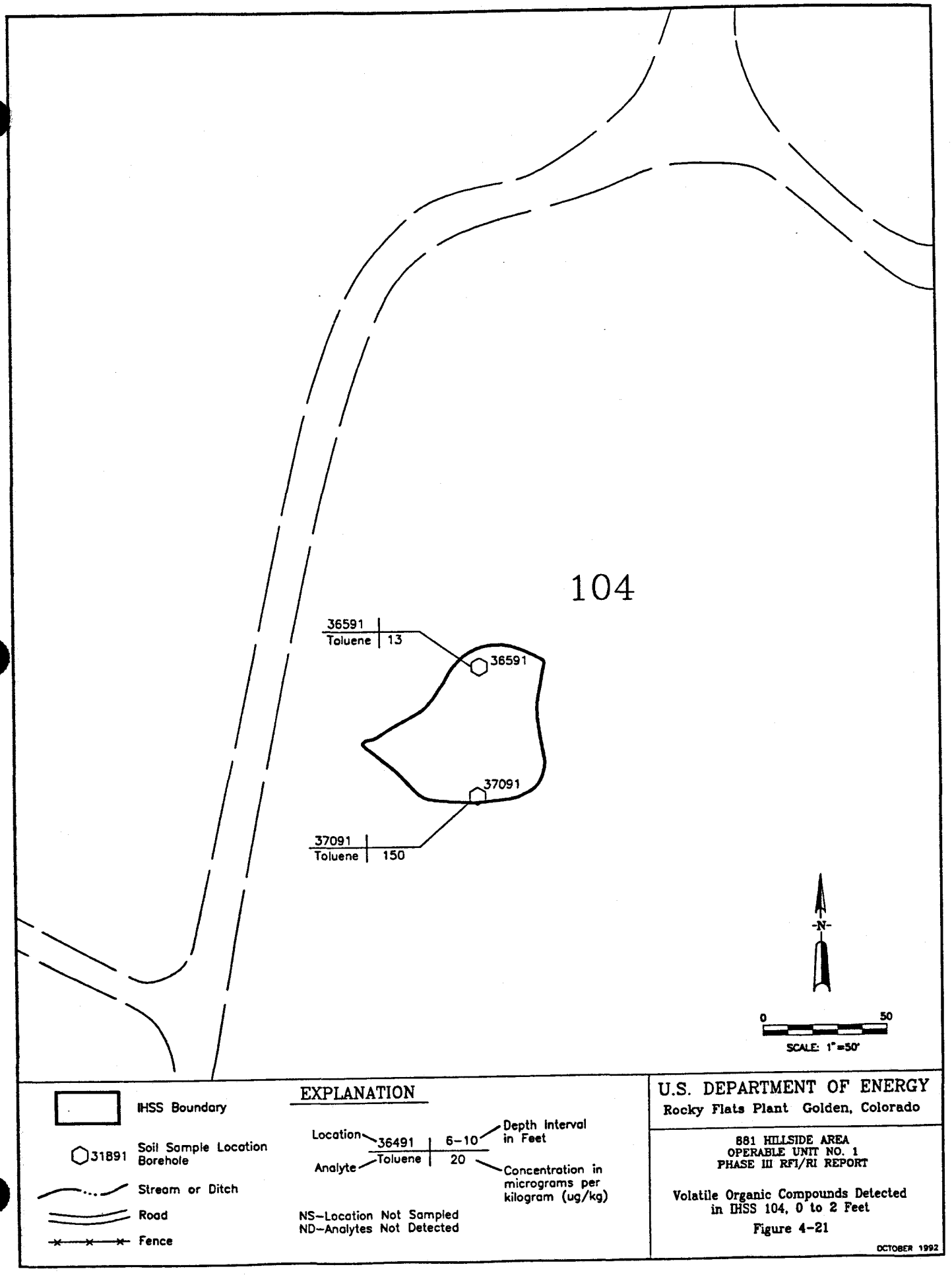
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

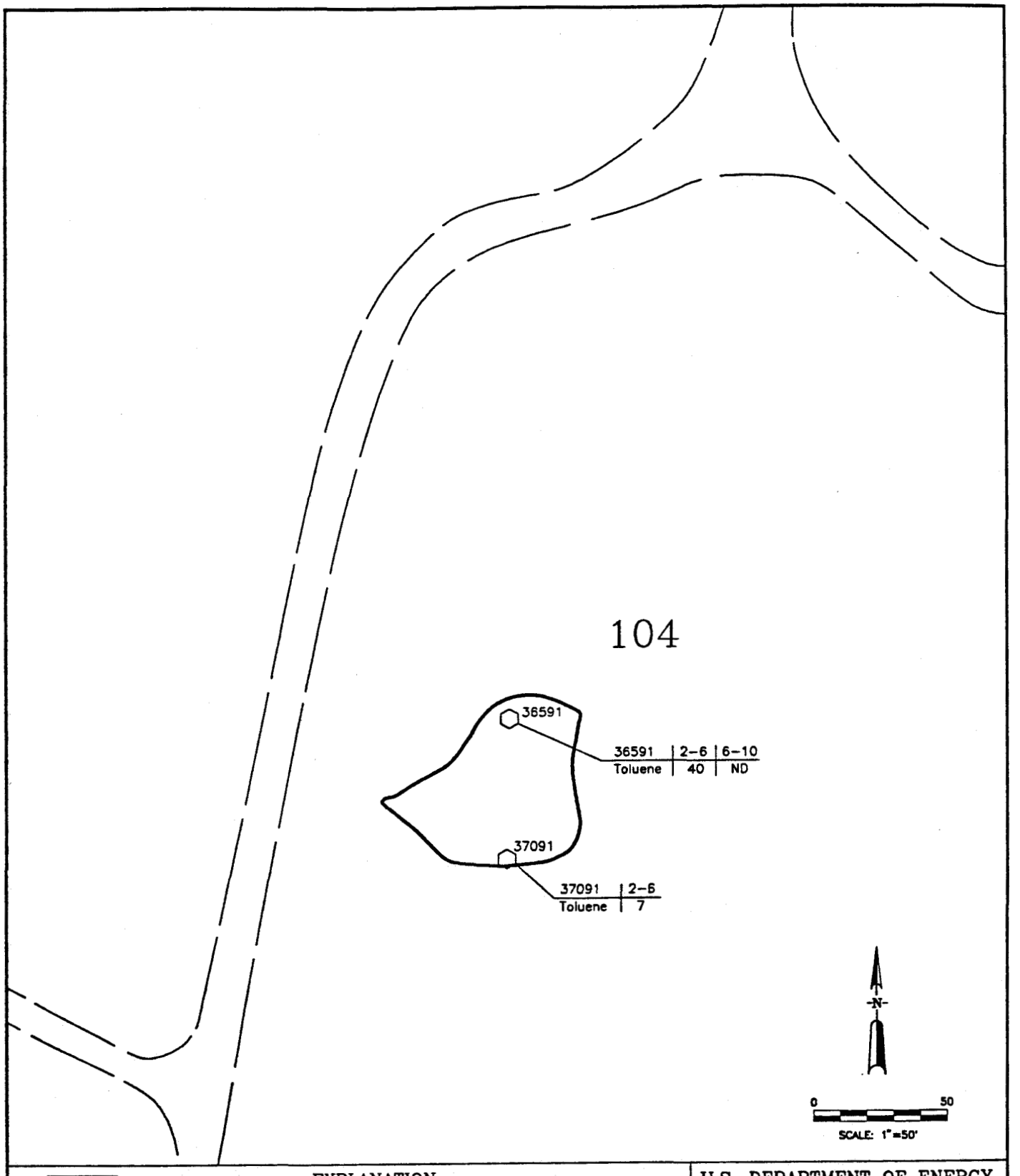
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils at IHSS 103

Figure 4-20

OCTOBER 1992


104
36591
Toluene 13
36591
37091
37091
Toluene 150
N
0
50
SCALE: 1"=50'
EXPLANATION
IHSS Boundary
31891 Soil Sample Location Borehole
Stream or Ditch
Road
Fence
Location 36491 6-10 Depth Interval in Feet
Analyte Toluene 20 Concentration in micrograms per kilogram (ug/kg)
NS-Location Not Sampled
ND-Analytes Not Detected
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Volatile Organic Compounds Detected in IHSS 104, 0 to 2 Feet
Figure 4-21
OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

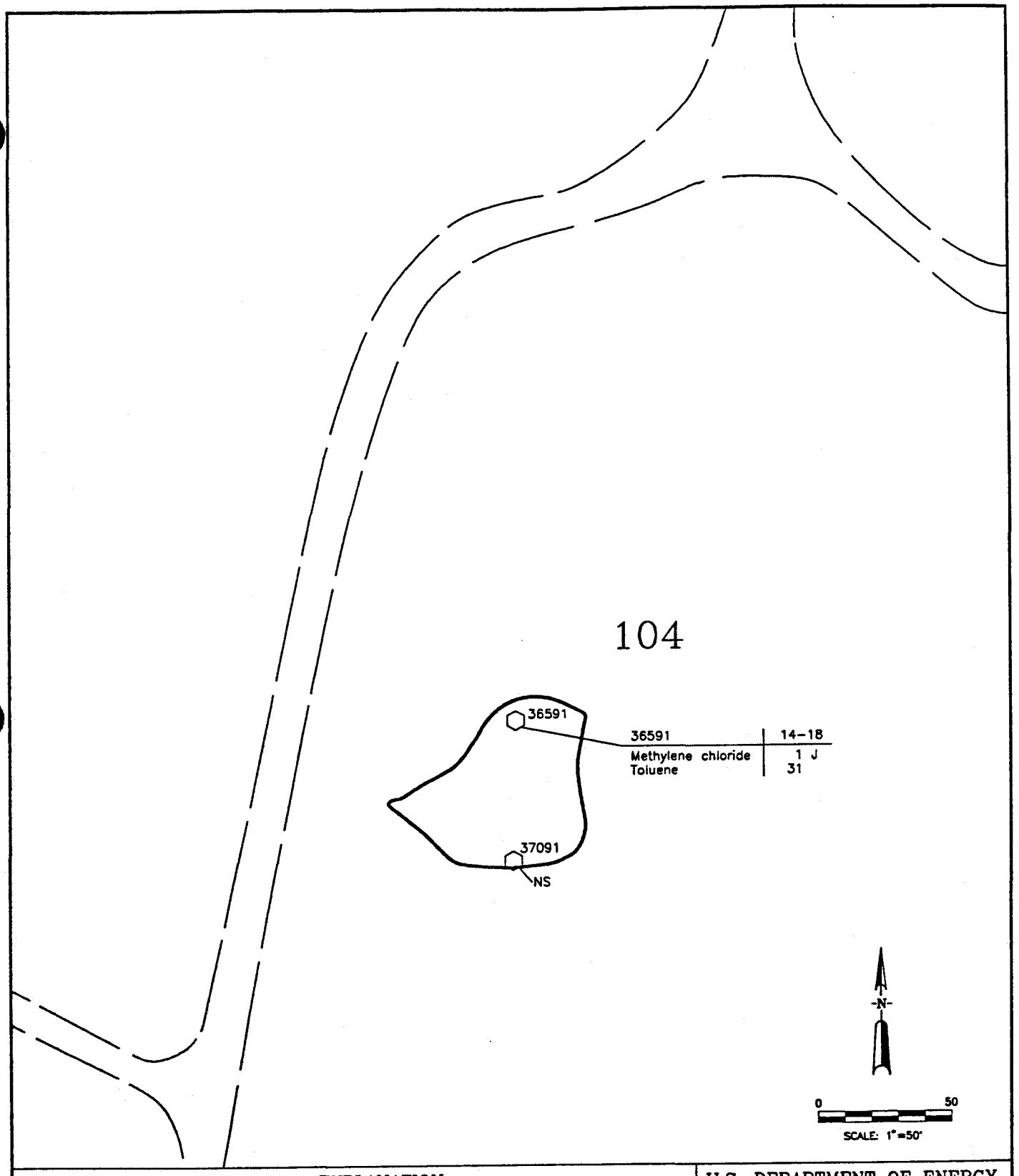
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 104, 2 to 10 Feet

Figure 4-22

OCTOBER 1992



IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

EXPLANATION

Location 36491 | 6-10 — Depth Interval in Feet

Analyte Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
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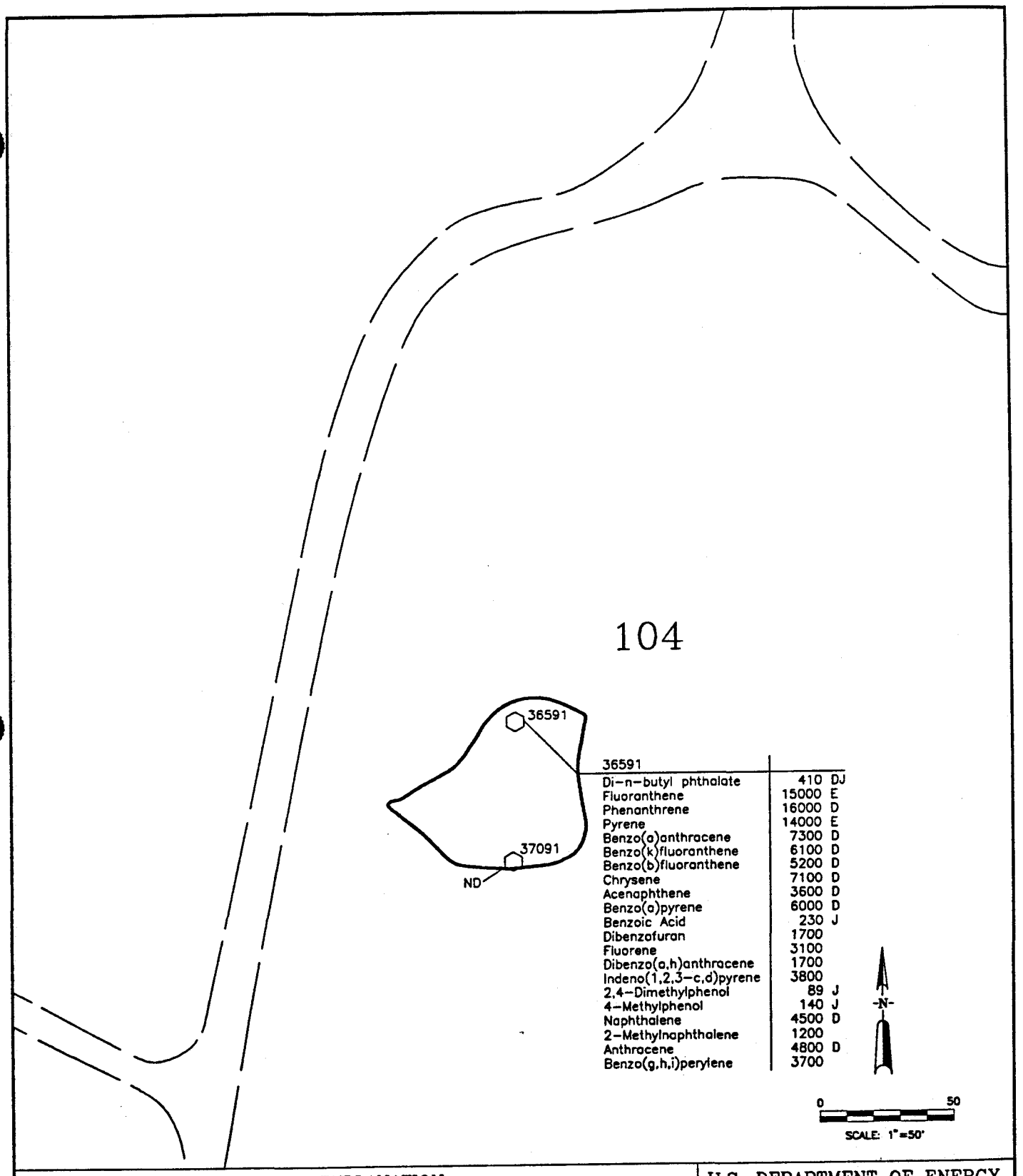
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 104, 10 to 18 Feet

Figure 4-23

OCTOBER 1992



36591		
Di-n-butyl phthalate	410	DJ
Fluoranthene	15000	E
Phenanthrene	16000	D
Pyrene	14000	E
Benzo(a)anthracene	7300	D
Benzo(k)fluoranthene	6100	D
Benzo(b)fluoranthene	5200	D
Chrysene	7100	D
Acenaphthene	3600	D
Benzo(a)pyrene	6000	D
Benzoic Acid	230	J
Dibenzofuran	1700	
Fluorene	3100	
Dibenzo(a,h)anthracene	1700	
Indeno(1,2,3-c,d)pyrene	3800	
2,4-Dimethylphenol	89	J
4-Methylphenol	140	J
Naphthalene	4500	D
2-Methylnaphthalene	1200	
Anthracene	4800	D
Benzo(g,h,i)perylene	3700	

EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

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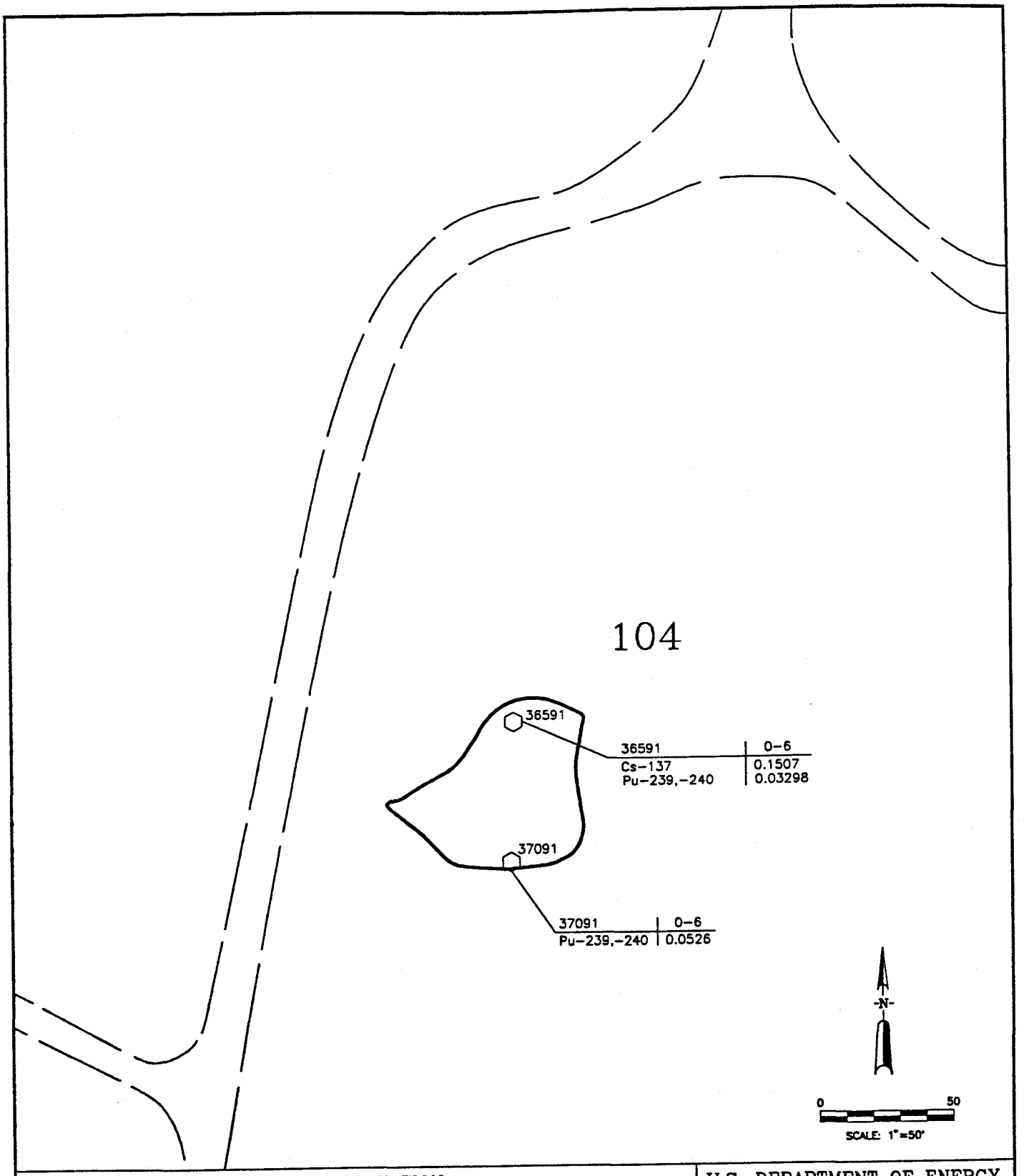
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 104, 0 to 6 Feet

Figure 4-24

OCTOBER 1992



EXPLANATION

IHSS Boundary

31B91 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE-Analytes Do Not Exceed Background
NS-Location Not Sampled

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

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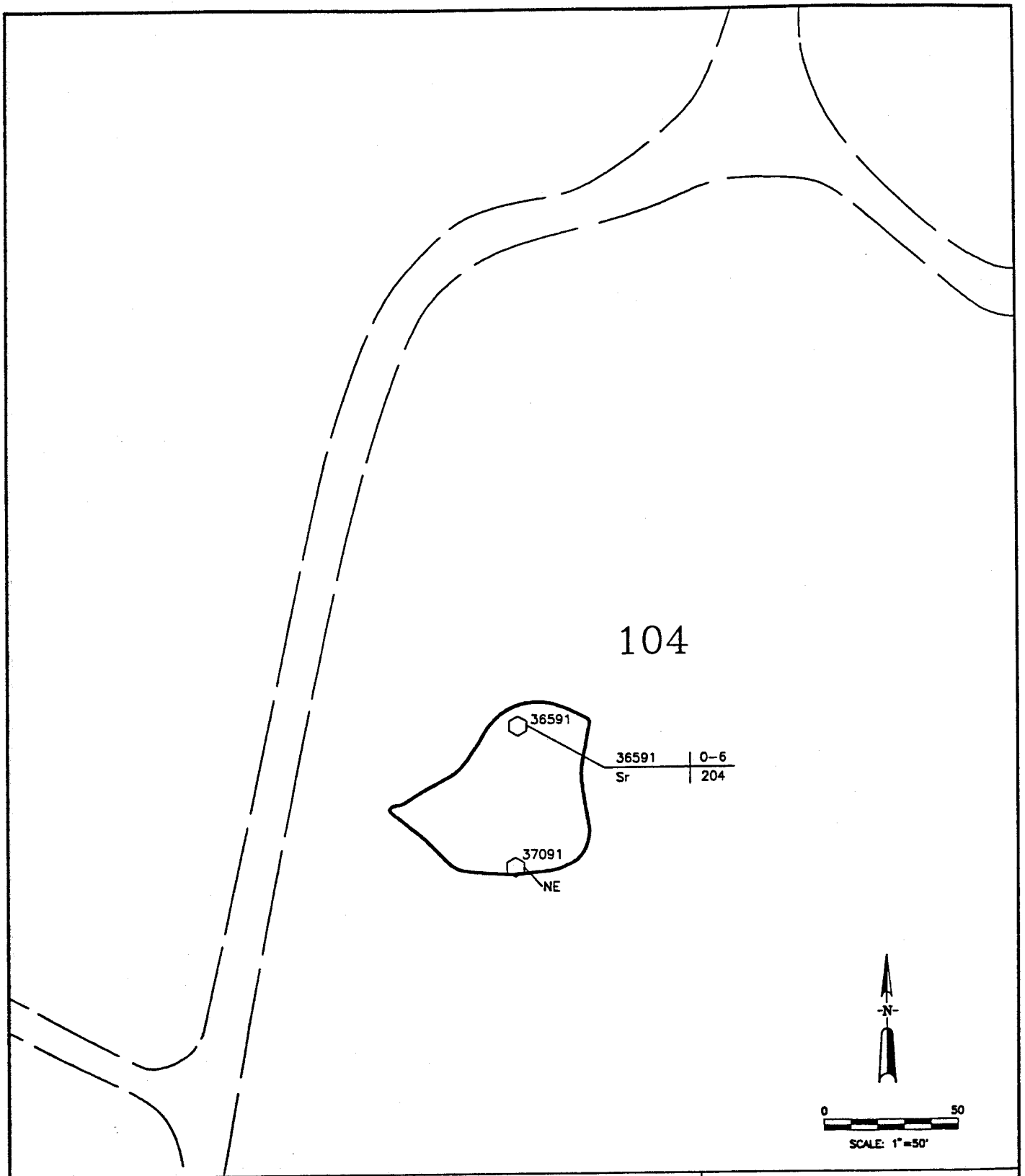
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at IHSS 104

Figure 4-25

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Ca | 40 — Concentration in milligrams per kilogram (mg/kg)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

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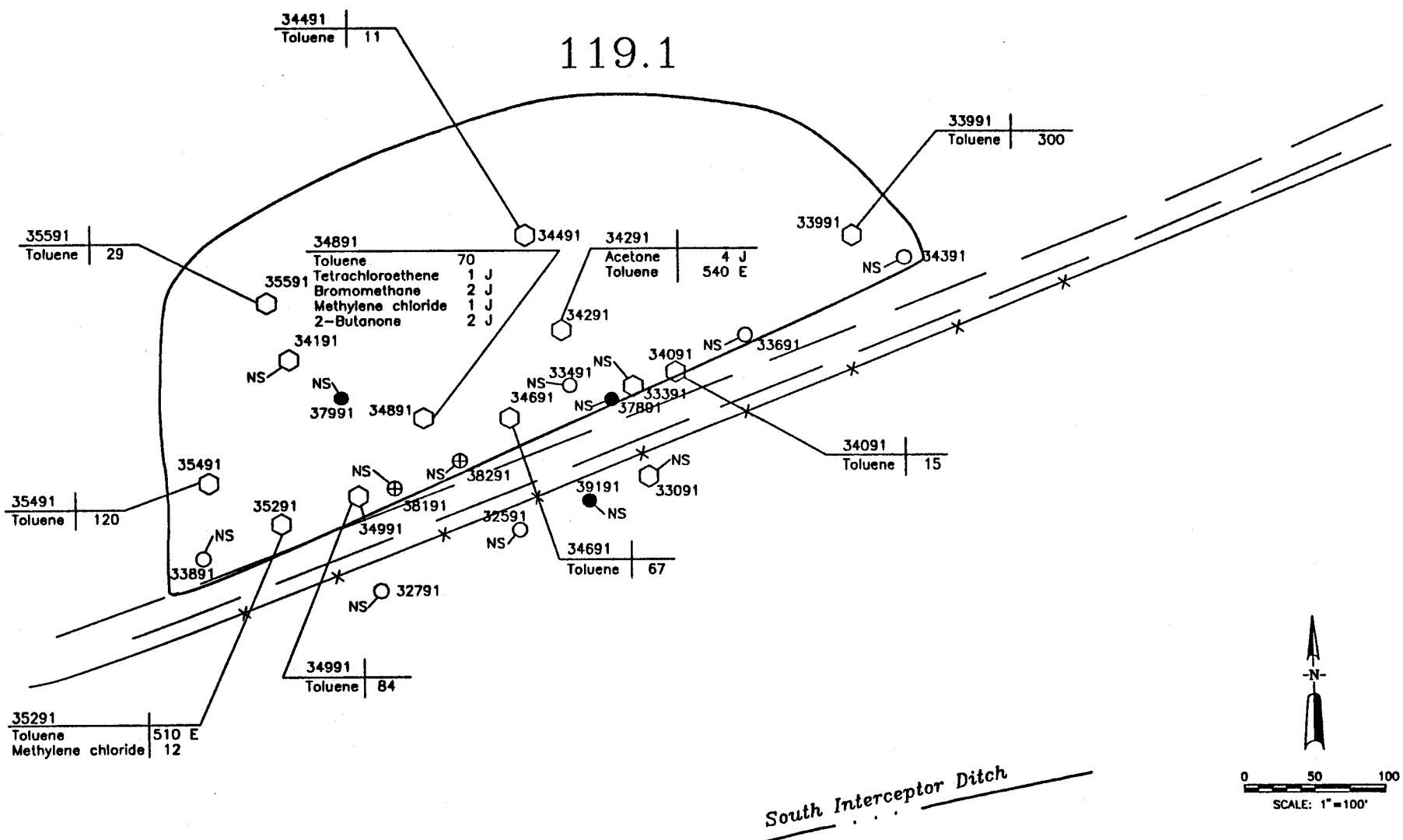
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils at IHSS 104

Figure 4-26

OCTOBER 1992



EXPLANATION

- IHSS Boundary
- 31891 Soil Sample Location Borehole
- 32791 Alluvial Monitoring Well
- 39191 Bedrock Monitoring Well
- 38191 Piezometer
- Stream or Ditch
- Road
- Fence

Location — 36491 | 6–10 — Depth Interval in feet
Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

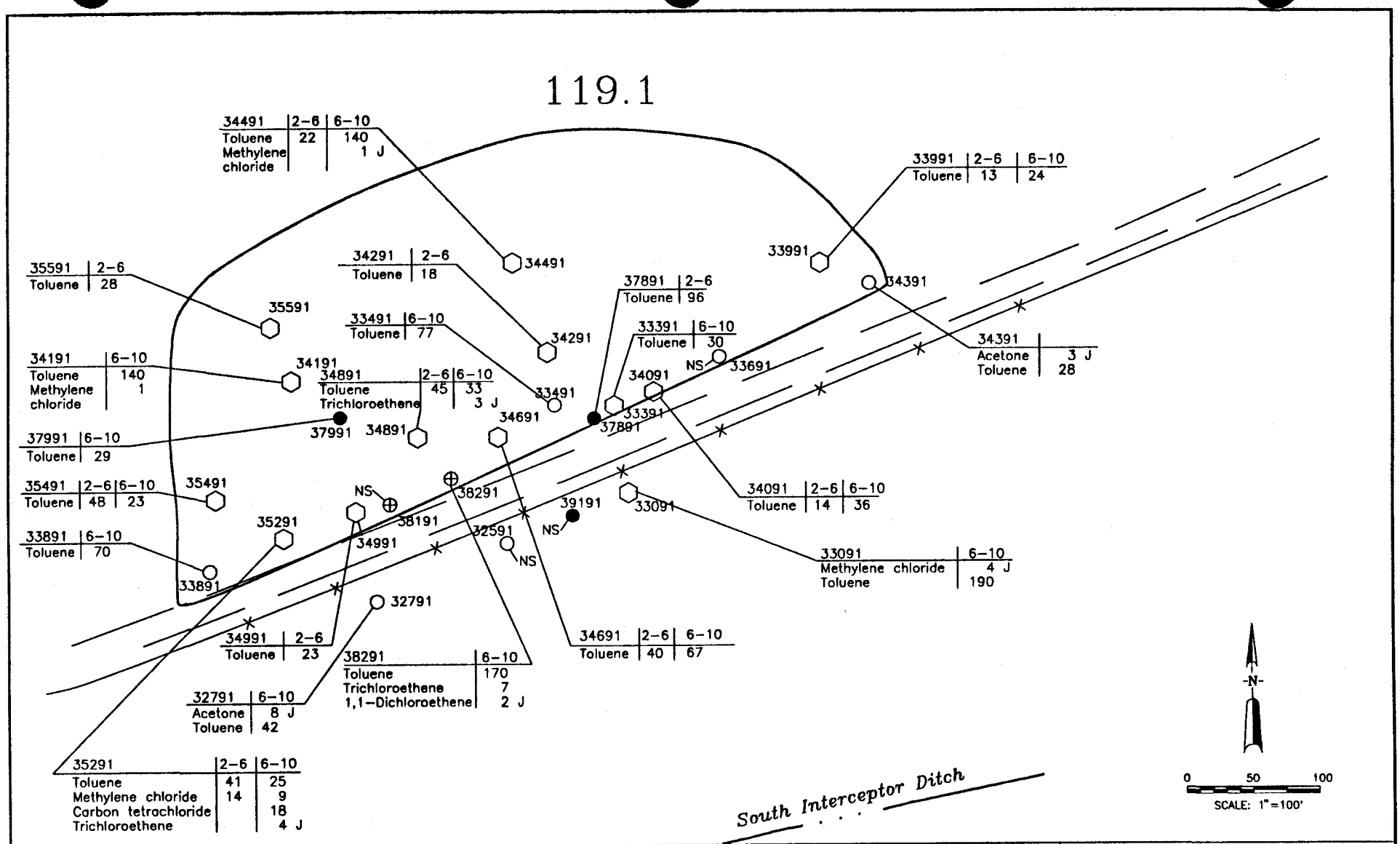
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 119.1, 0 to 2 Feet

Figure 4-27

OCTOBER 1992



EXPLANATION

- IHSS Boundary
- Soil Sample Location
- 31891 Borehole
- 32791 Alluvial Monitoring Well
- 39191 Bedrock Monitoring Well
- 38191 Piezometer
- Stream or Ditch
- Road
- Fence

Location — 36491 | 6-10 — Depth Interval in feet
Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

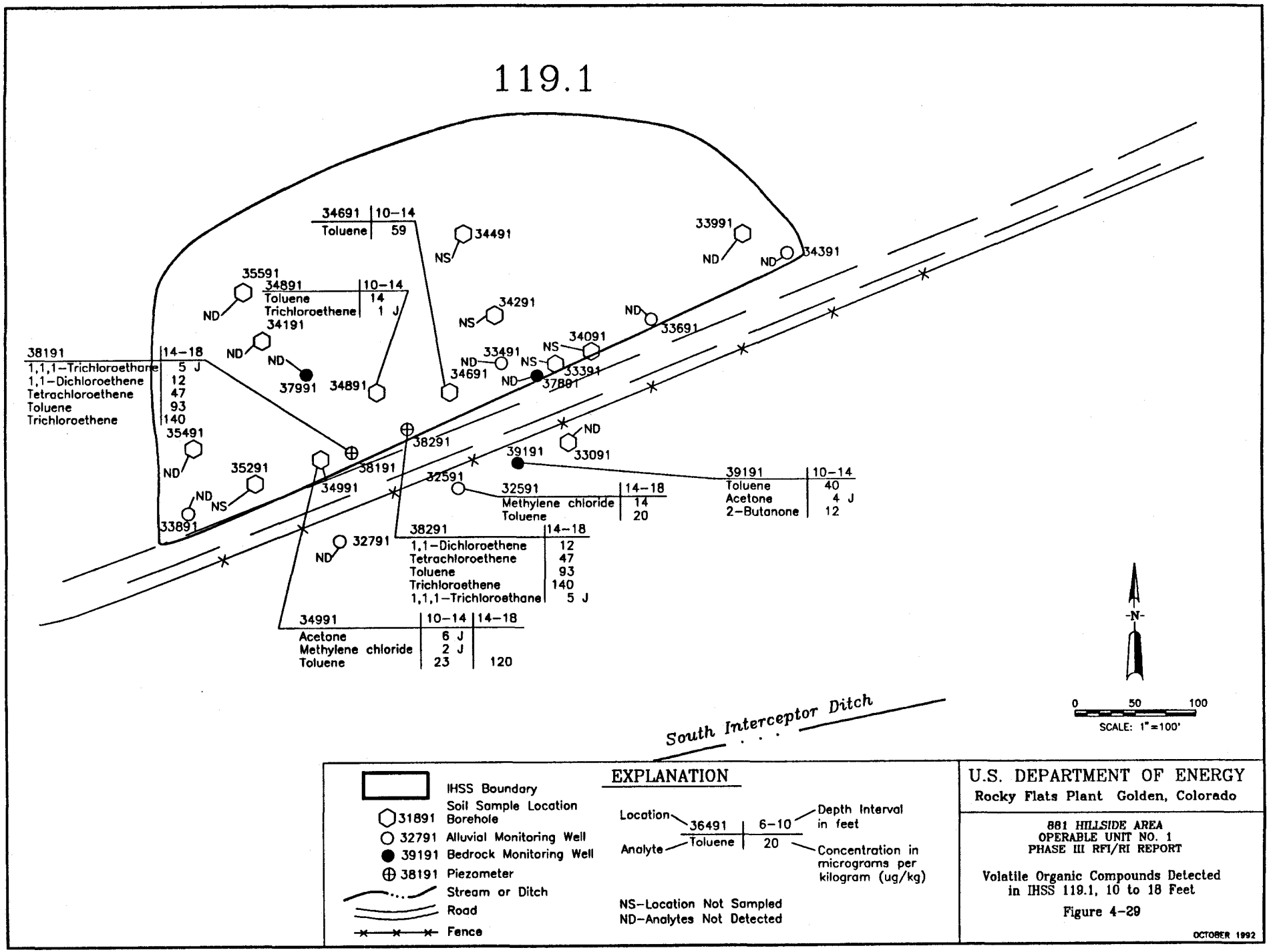
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

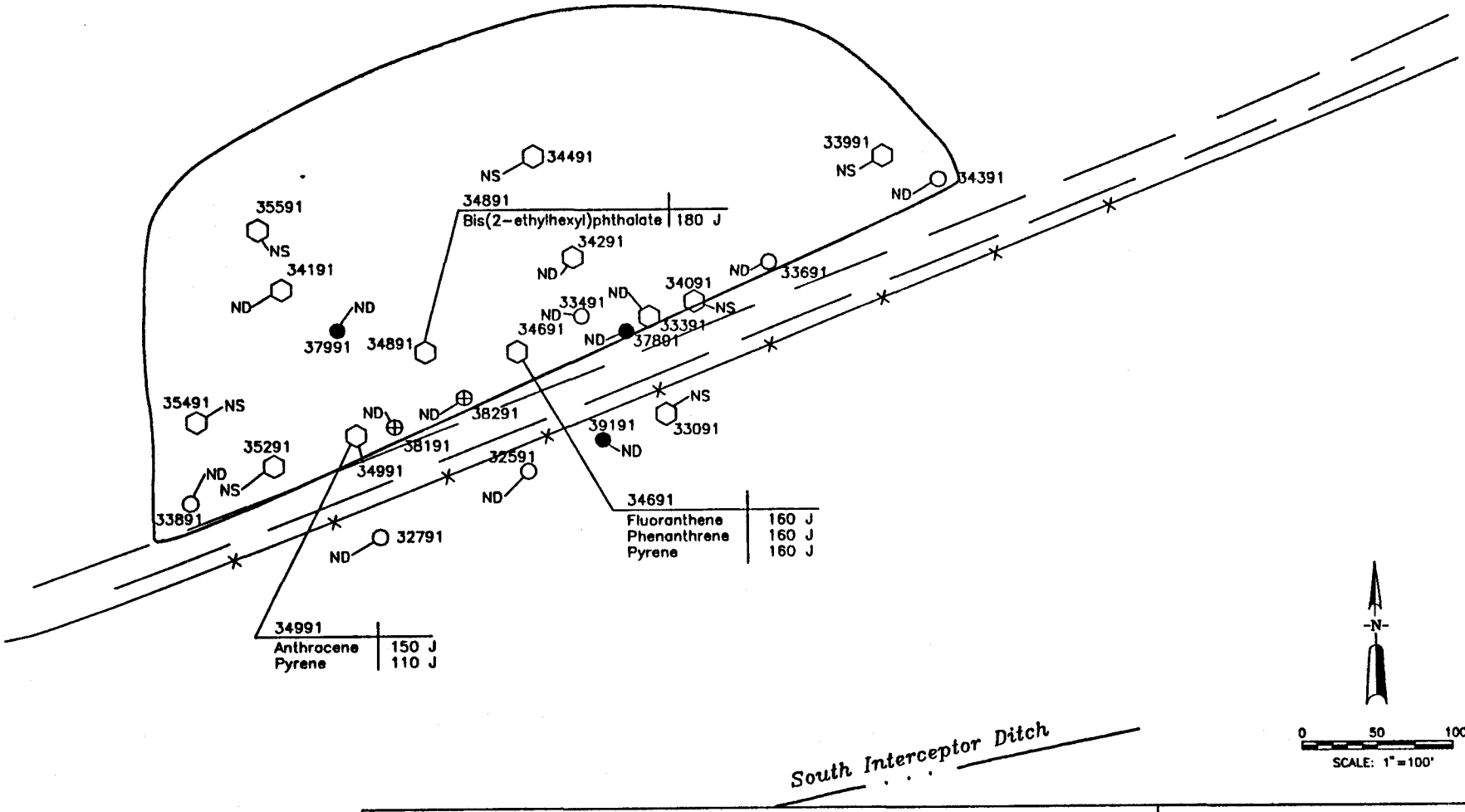
Volatile Organic Compounds Detected in IHSS 119.1, 2 to 10 Feet

Figure 4-28

OCTOBER 1992


119.1
34691 | 10–14
Toluene | 59
34491
NS
33991
ND
ND
34391
35591
ND
34891 | 10–14
Toluene | 14
Trichloroethene | 1 J
34191
ND
ND
37991
34891
34291
NS
ND
33691
34091
NS
33491
ND
NS
33391
34691
ND
37891
38191 | 14–18
1,1,1–Trichloroethane | 5 J
1,1–Dichloroethene | 12
Tetrachloroethene | 47
Toluene | 93
Trichloroethene | 140
35491
ND
35291
ND
NS
33891
38191
34991
38291
ND
33091
39191
32591
32591 | 14–18
Methylene chloride | 14
Toluene | 20
39191 | 10–14
Toluene | 40
Acetone | 4 J
2–Butanone | 12
32791
ND
38291 | 14–18
1,1–Dichloroethene | 12
Tetrachloroethene | 47
Toluene | 93
Trichloroethene | 140
1,1,1–Trichloroethane | 5 J
34991 | 10–14 | 14–18
Acetone | 6 J
Methylene chloride | 2 J
Toluene | 23 | 120
South Interceptor Ditch
-N-
0 50 100
SCALE: 1"=100'
EXPLANATION
IHSS Boundary
Soil Sample Location
31891 Borehole
32791 Alluvial Monitoring Well
39191 Bedrock Monitoring Well
38191 Piezometer
Stream or Ditch
Road
Fence
Location
36491 | 6–10
Toluene | 20
Analyte
Depth Interval in feet
Concentration in micrograms per kilogram (ug/kg)
NS–Location Not Sampled
ND–Analytes Not Detected
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Volatile Organic Compounds Detected in IHSS 119.1, 10 to 18 Feet
Figure 4-29
OCTOBER 1992

119.1



EXPLANATION

- IHSS Boundary
- Soil Sample Location
- 31891 Borehole
- 32791 Alluvial Monitoring Well
- 39191 Bedrock Monitoring Well
- 38191 Piezometer
- Stream or Ditch
- Road
- Fence

Location — 36491 | 6–10 — Depth interval in feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

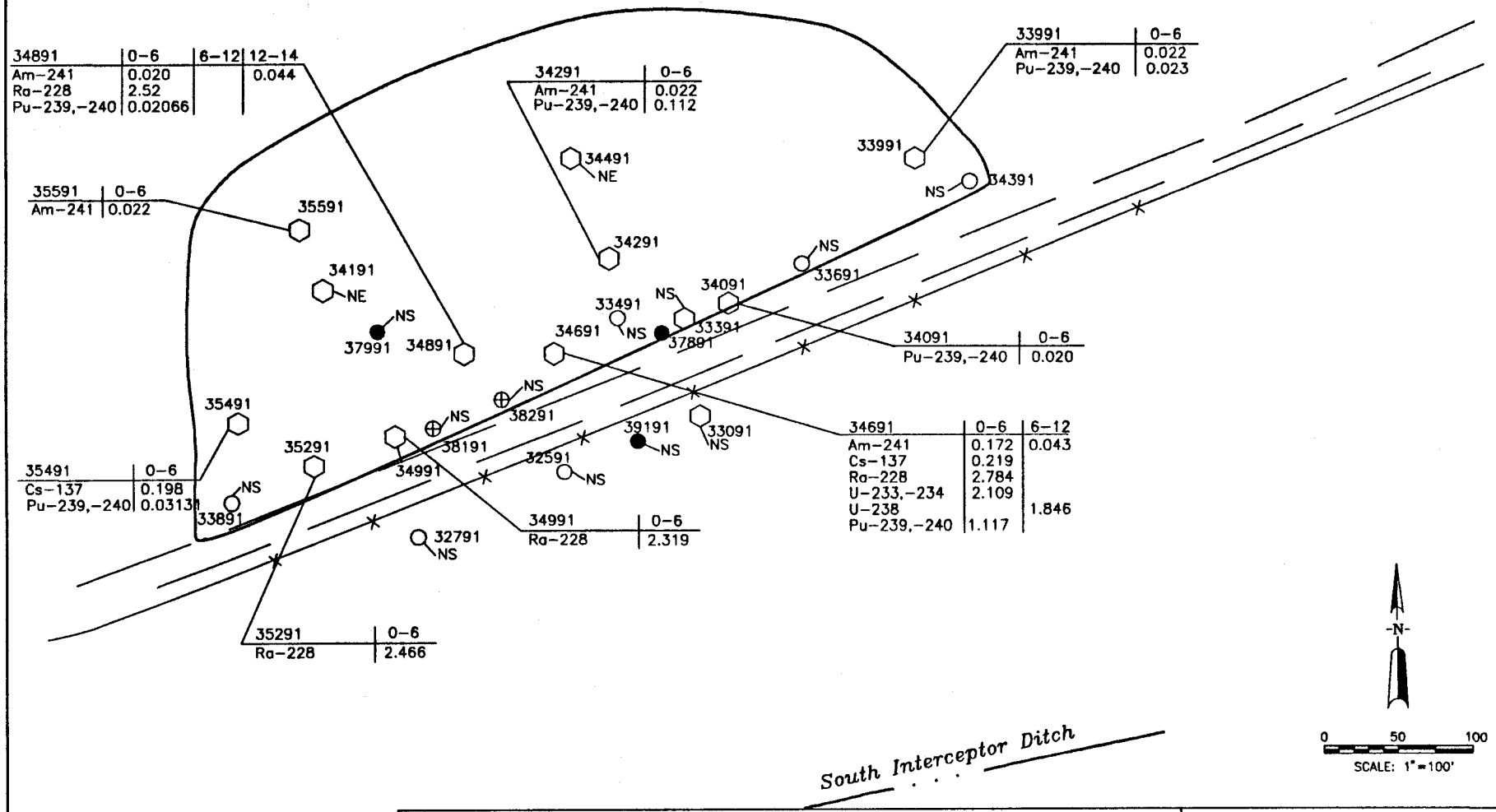
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 119.1, 0 to 6 Feet

Figure 4-30

OCTOBER 1992

119.1



EXPLANATION

- IHSS Boundary
- Soil Sample Location
- 31891 Borehole
- 32791 Alluvial Monitoring Well
- 39191 Bedrock Monitoring Well
- 38191 Piezometer
- Stream or Ditch
- Road
- Fence

Location — 36491 | 6-10 — Depth Interval in feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

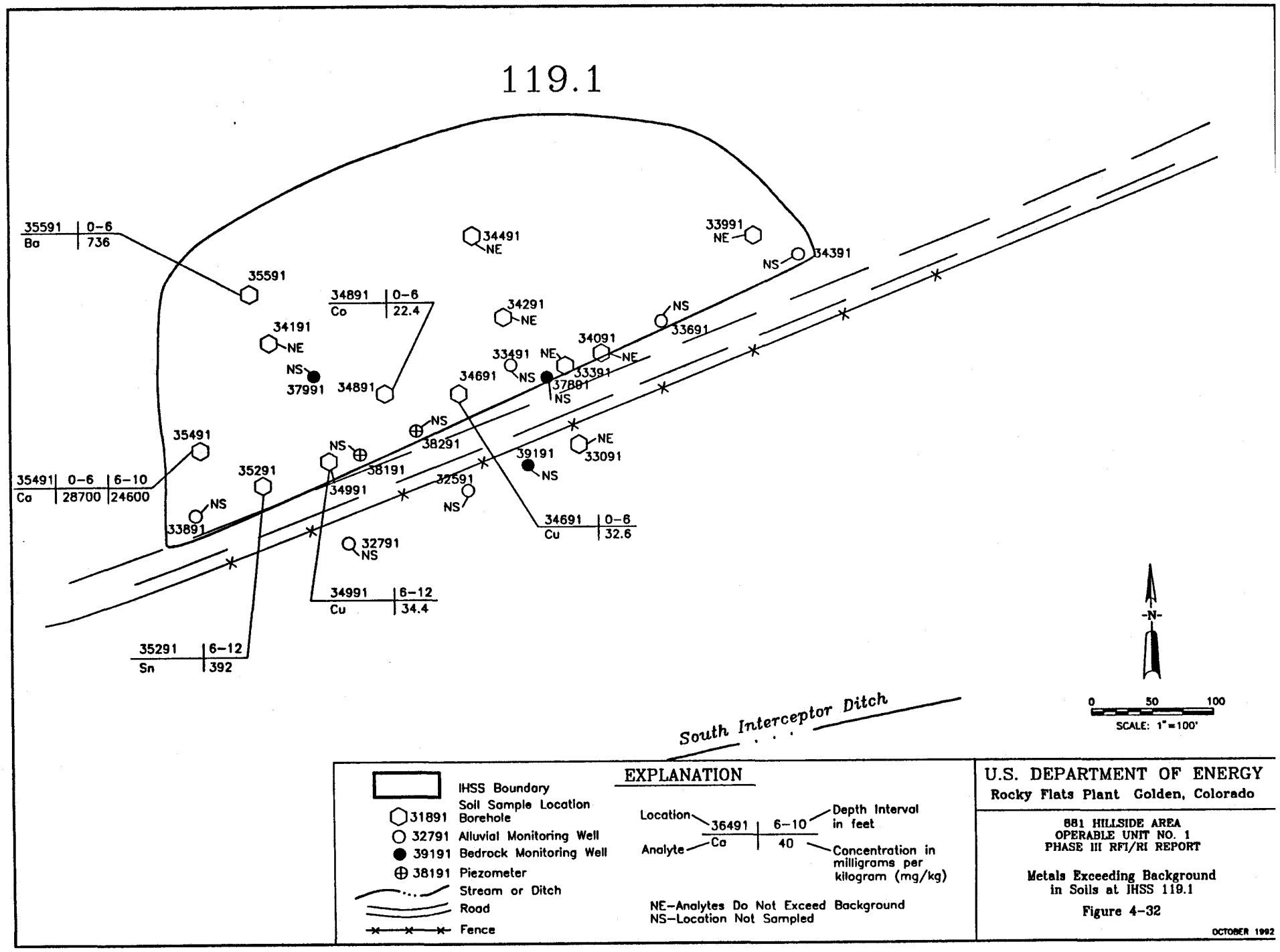
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

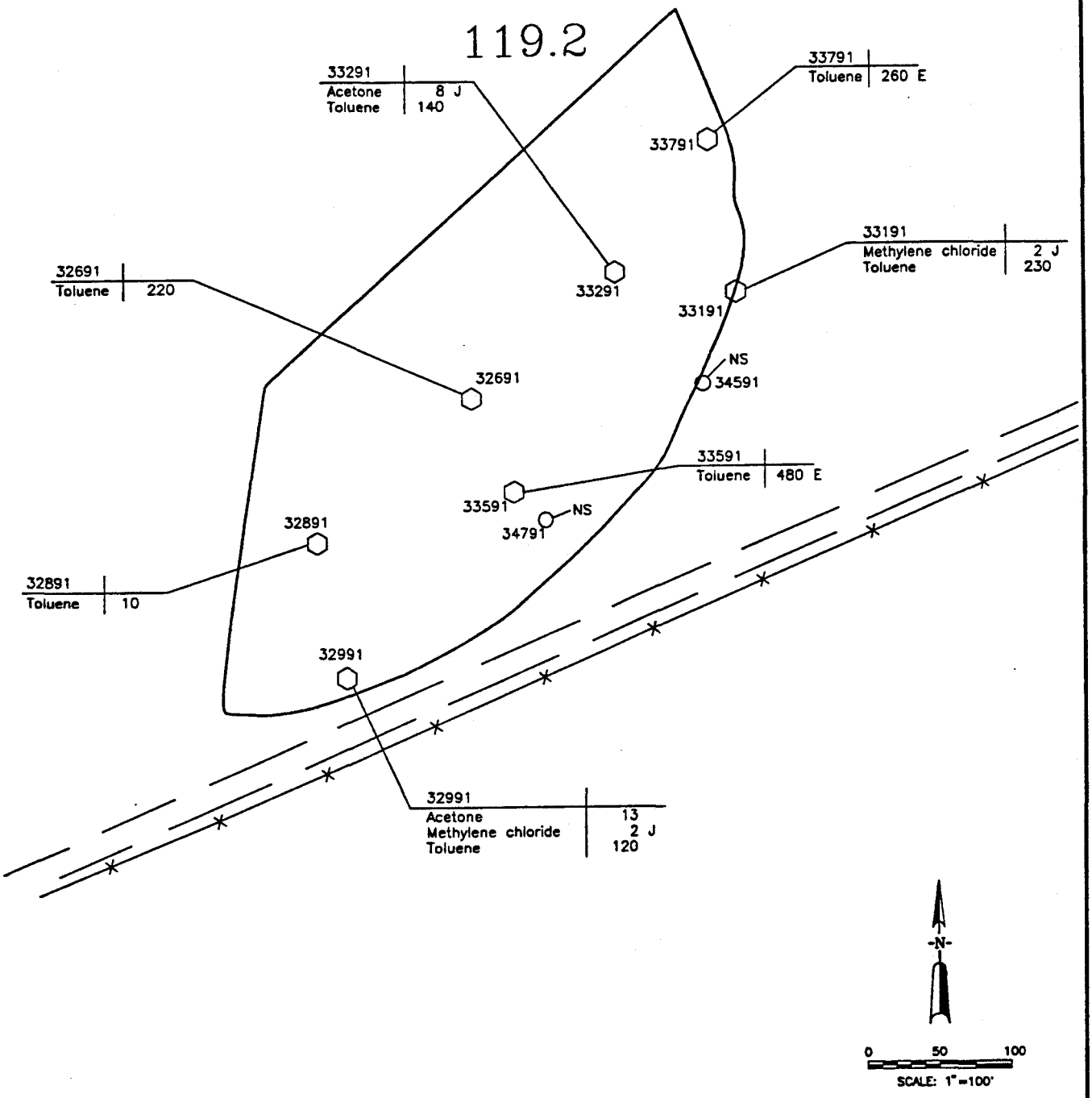
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at IHSS 119.1

Figure 4-31

OCTOBER 1992


119.1
35591 | 0-6
Ba | 736
35591
34491
NE
33991
NE
34391
NS
34891 | 0-6
Co | 22.4
34291
NE
NS
33691
34191
NE
NS
37991
34891
34091
NE
33491
NE
NS
33391
37891
NS
34691
NS
38291
35491
NE
33091
39191
NS
35491 | 0-6 | 6-10
Co | 28700 | 24600
35291
NS
38191
34991
32591
NS
NS
33891
34691 | 0-6
Cu | 32.6
32791
NS
34991 | 6-12
Cu | 34.4
35291 | 6-12
Sn | 392
South Interceptor Ditch
-N-
0 50 100
SCALE: 1"=100'
EXPLANATION
IHSS Boundary
Soil Sample Location
31891 Borehole
32791 Alluvial Monitoring Well
39191 Bedrock Monitoring Well
38191 Piezometer
Stream or Ditch
Road
Fence
Location
36491 | 6-10
Depth Interval in feet
Analyte
Ca | 40
Concentration in milligrams per kilogram (mg/kg)
NE-Analytes Do Not Exceed Background
NS-Location Not Sampled
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Metals Exceeding Background in Soils at IHSS 119.1
Figure 4-32
OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

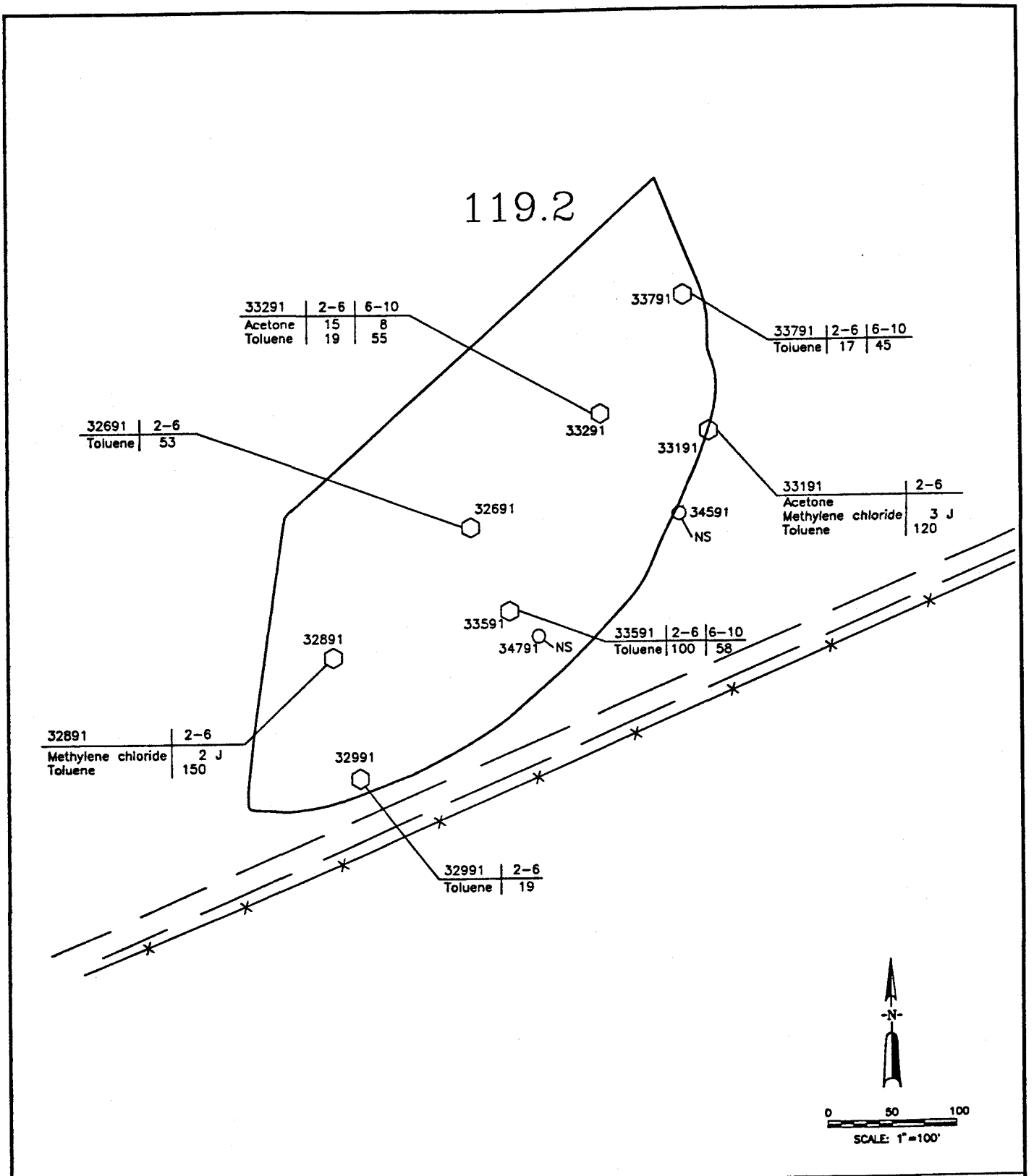
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 119.2, 0 to 2 Feet

Figure 4-33

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

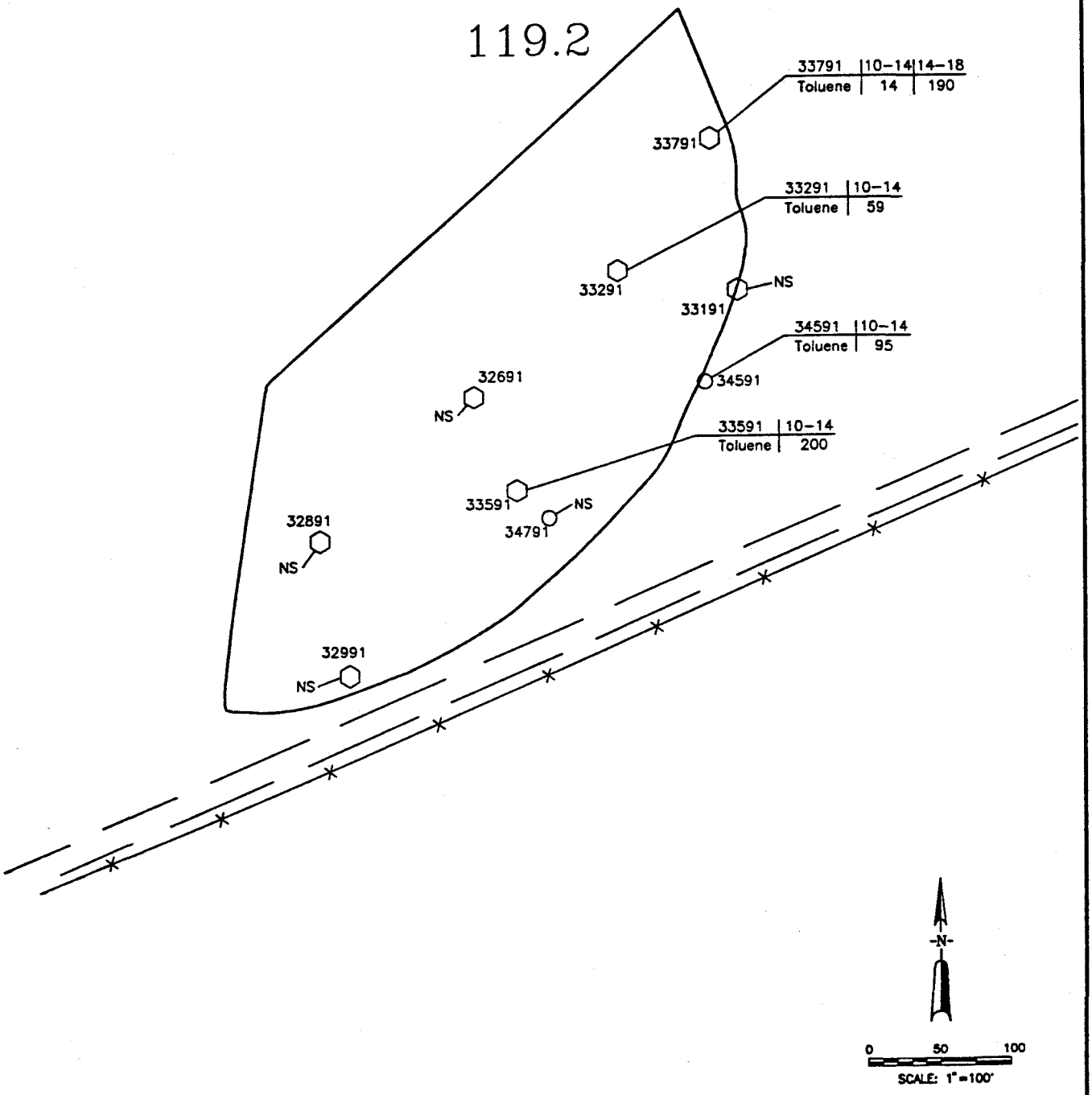
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 119.2, 2 to 10 Feet

Figure 4-34

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

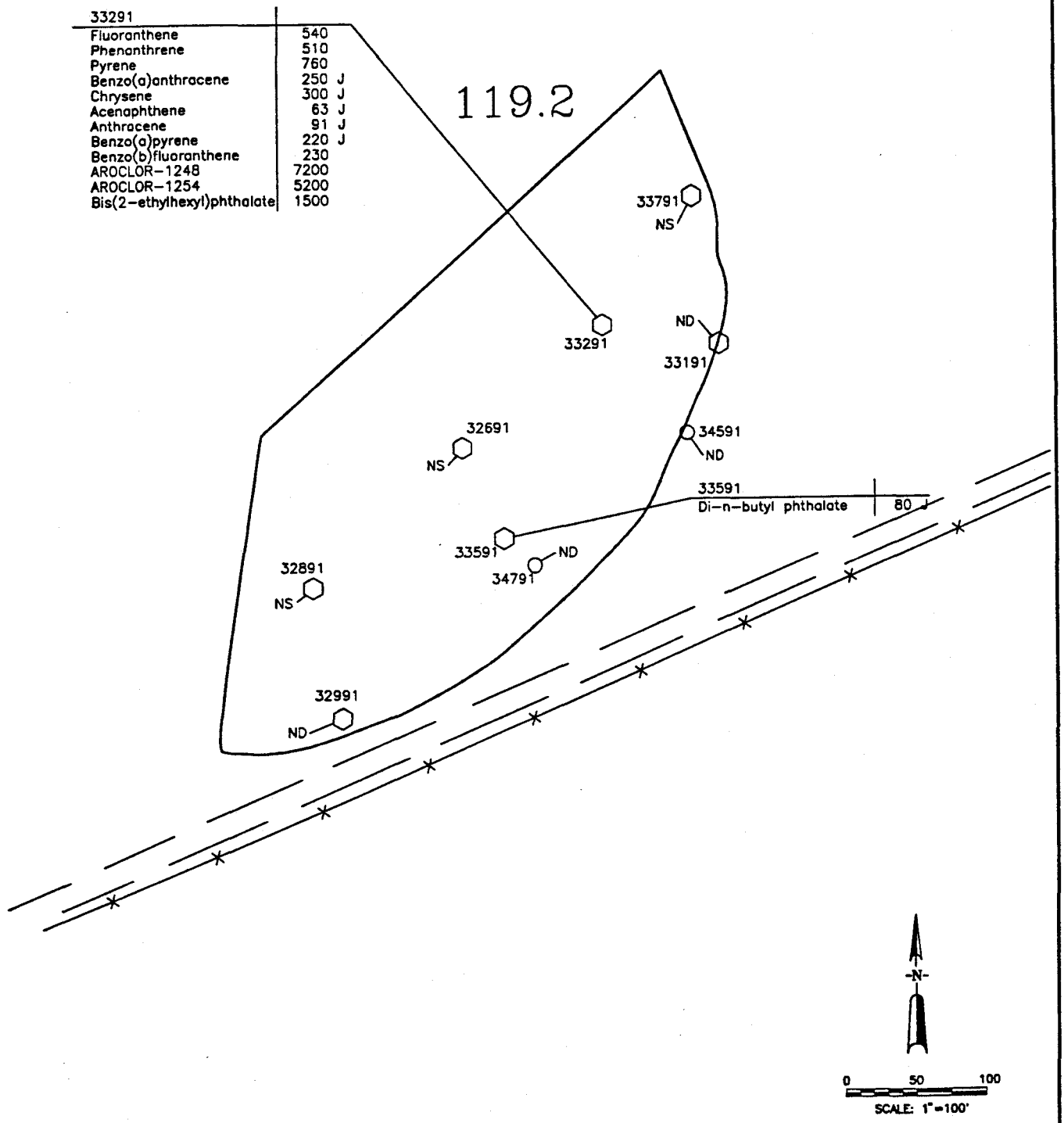
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 119.2, 10 to 18 Feet

Figure 4-35

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analyes Not Detected

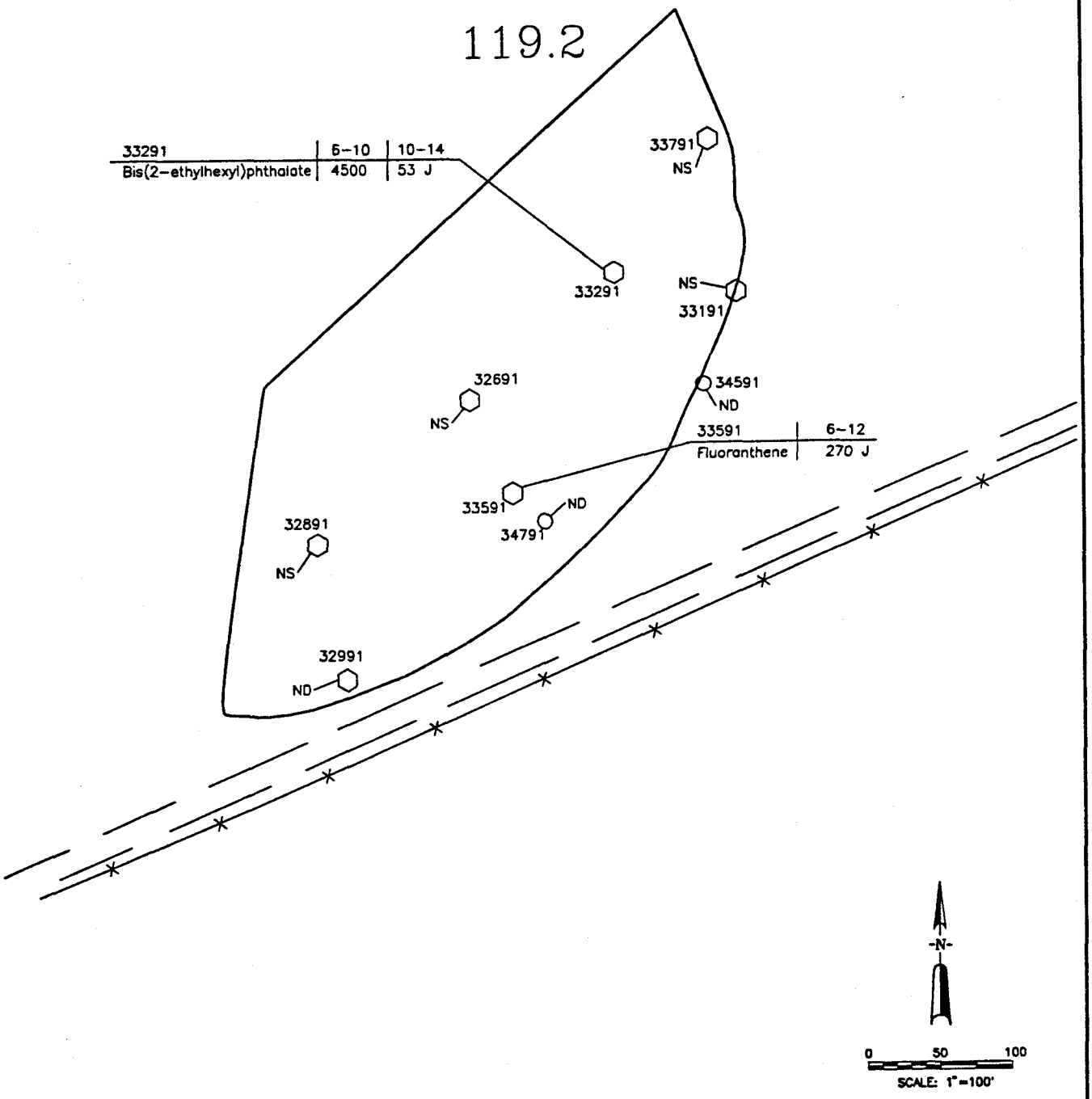
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 119.2, 0 to 6 Feet

Figure 4-36

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS—Location Not Sampled
ND—Analyes Not Detected

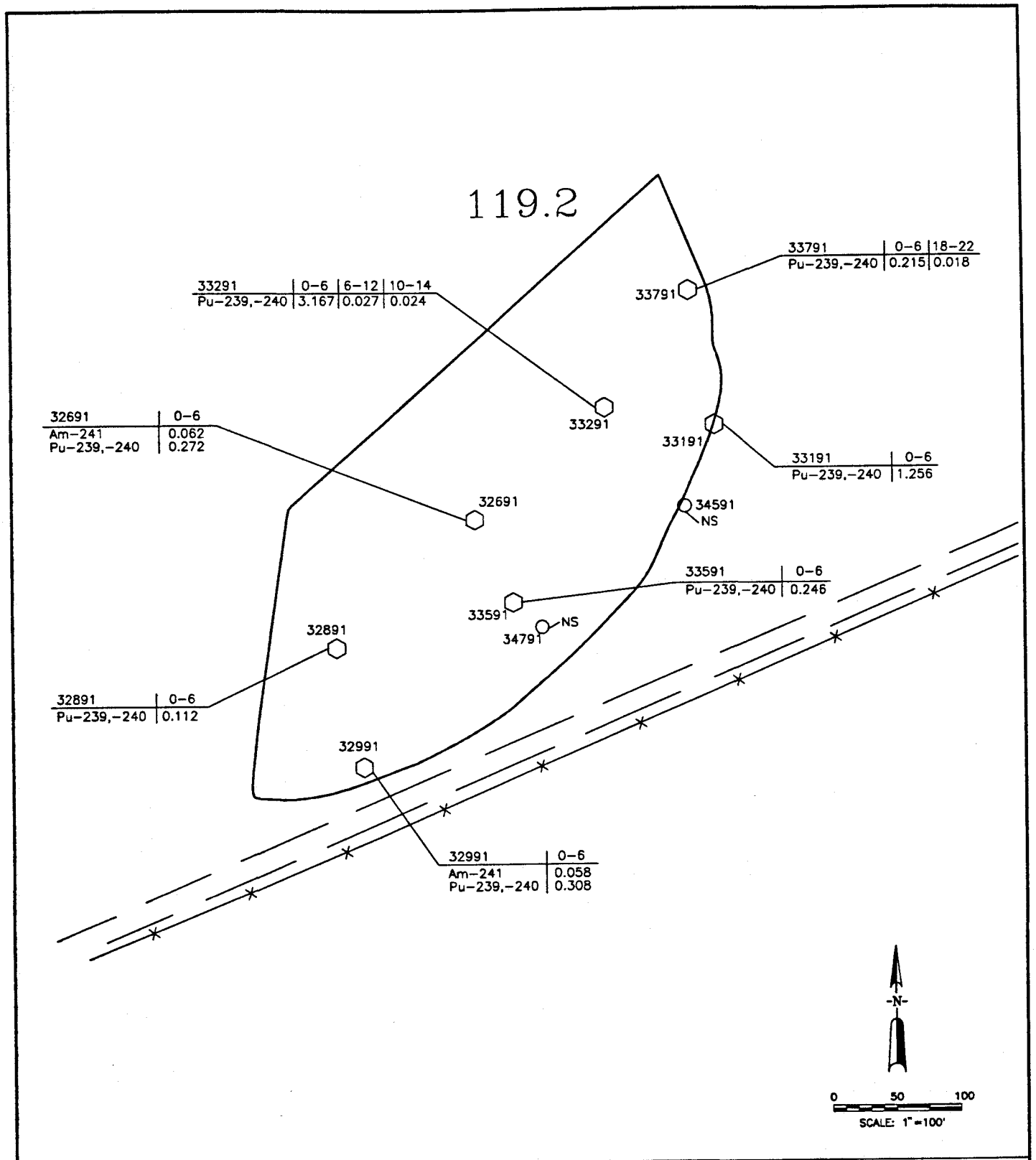
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 119.2, 6 to 12 Feet

Figure 4-37

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

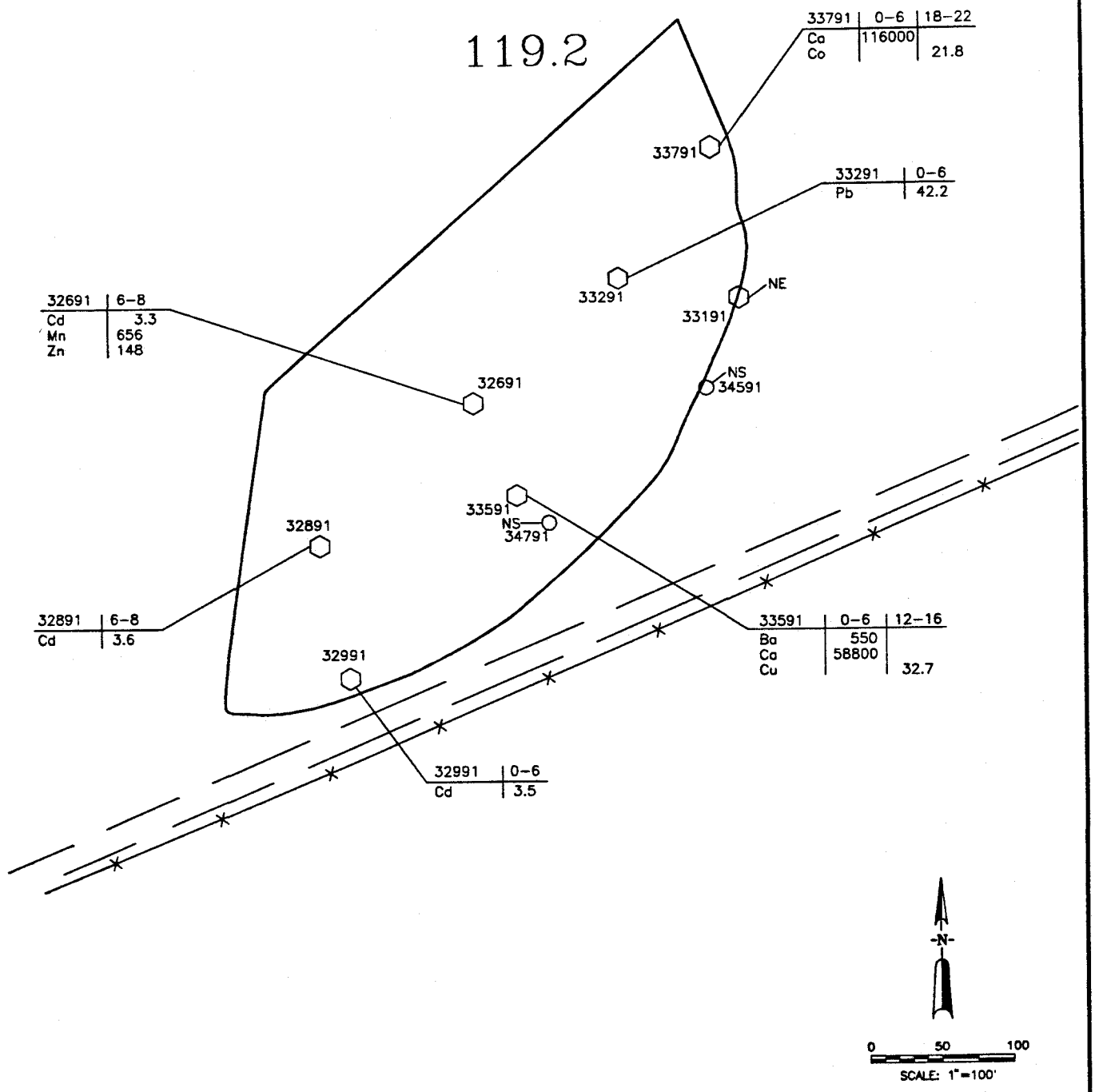
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at IHSS 119.2

Figure 4-38

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

34591 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Ca | 40 — Concentration in milligrams per kilogram (mg/kg)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
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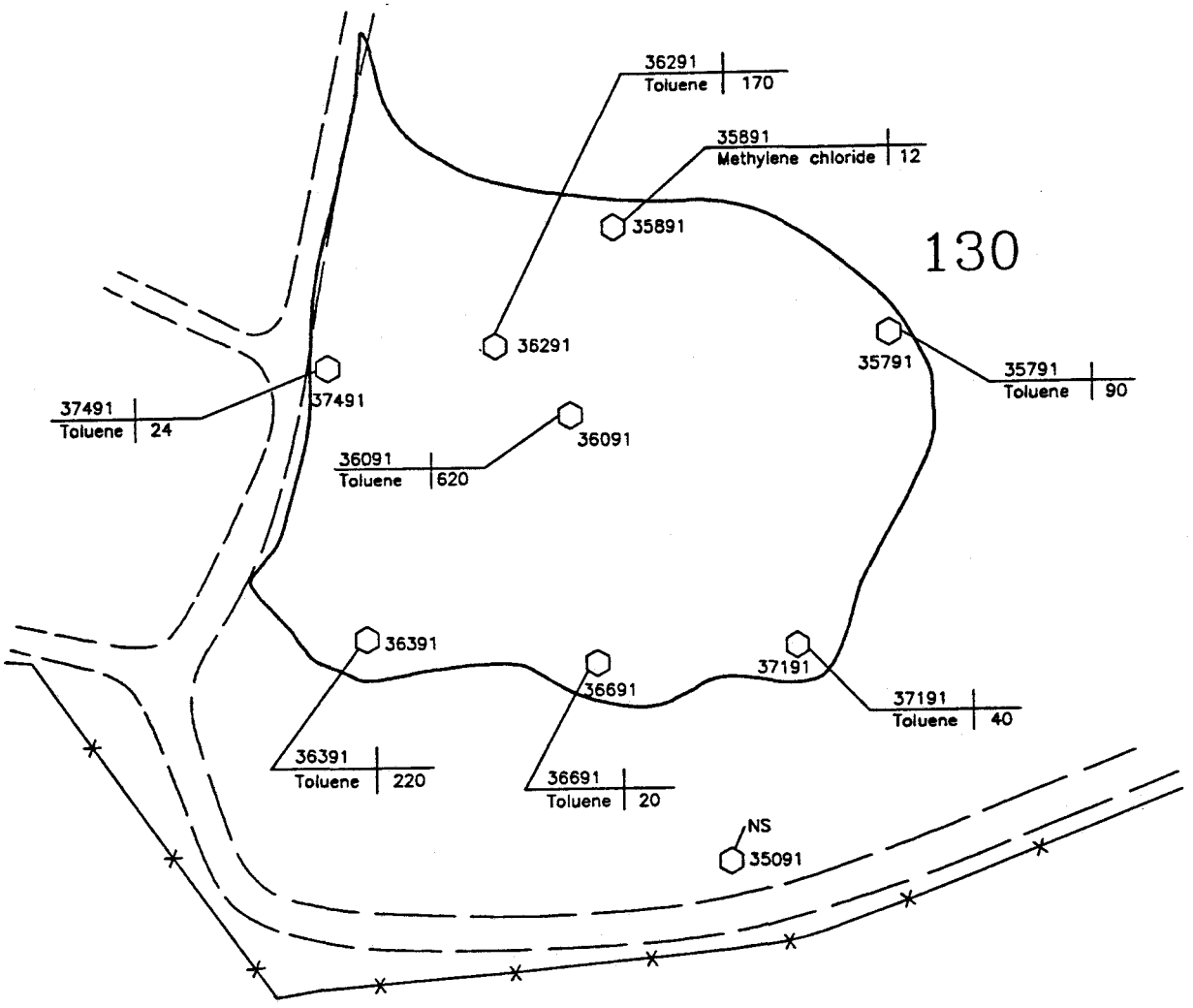
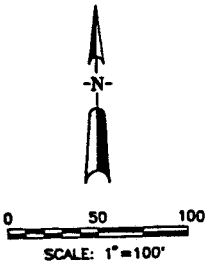
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils at IHSS 119.2

Figure 4-39

OCTOBER 1992





EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

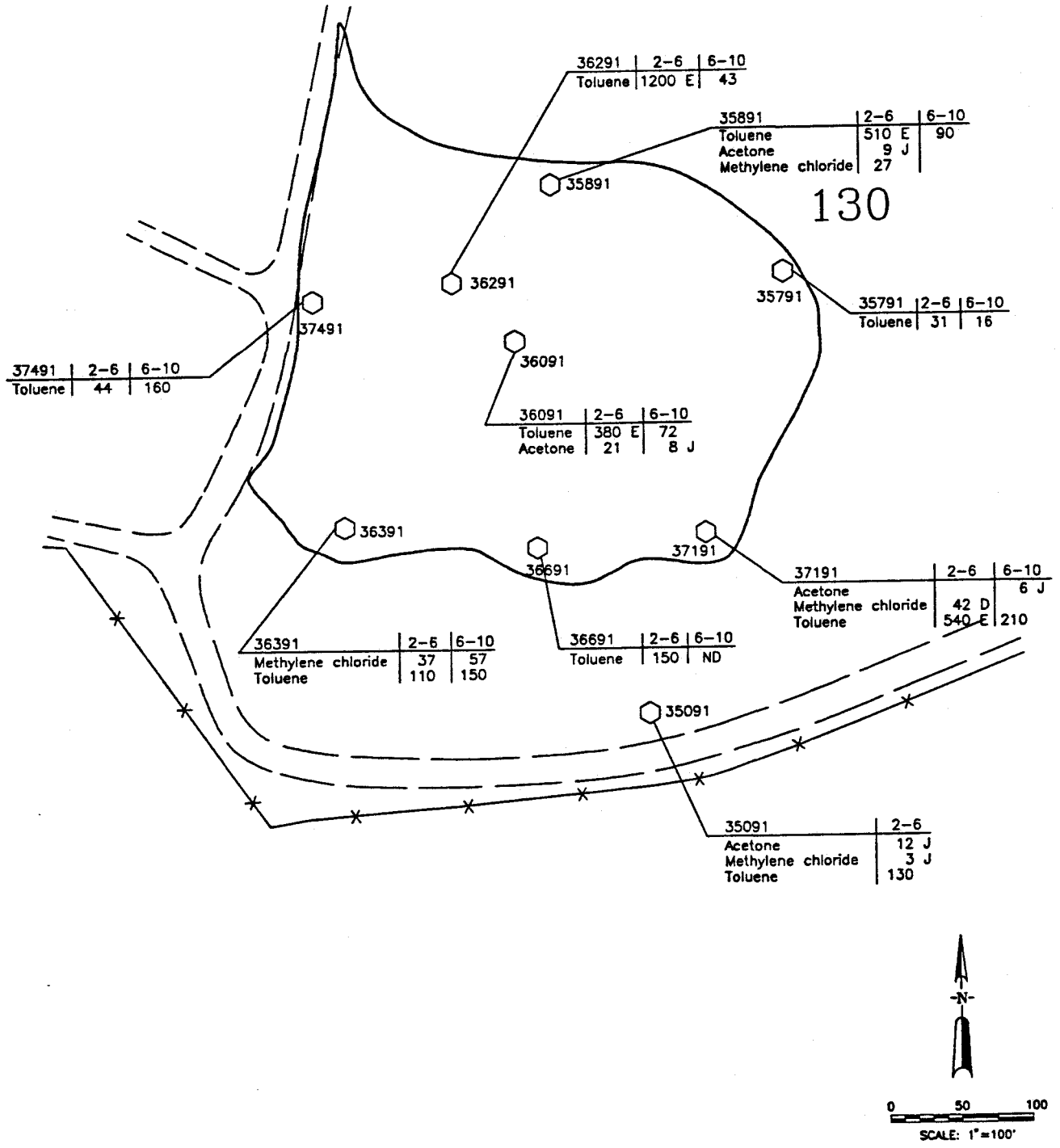
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 130, 0 to 2 Feet

Figure 4-40

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
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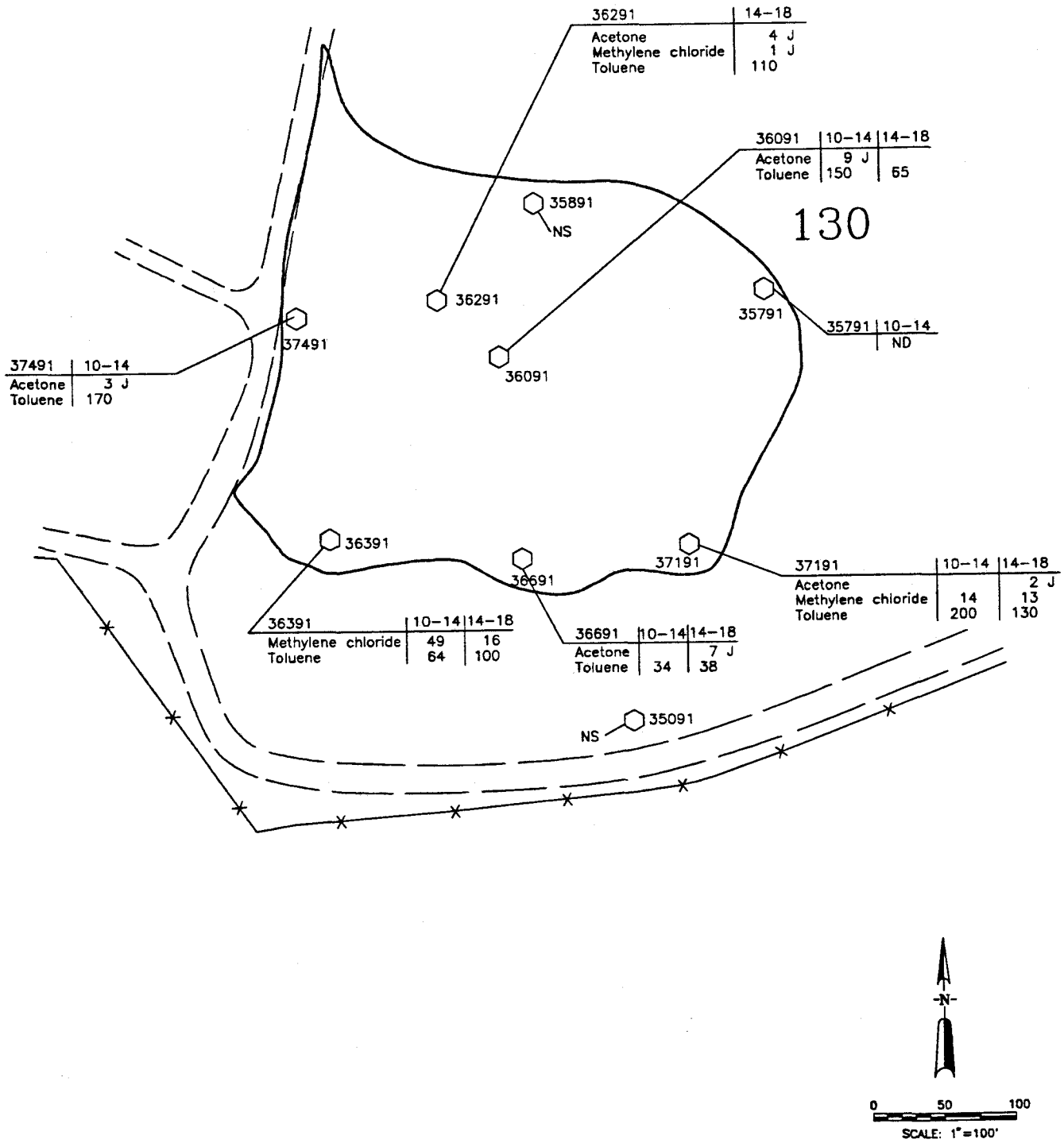
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 130, 2 to 10 Feet

Figure 4-41

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

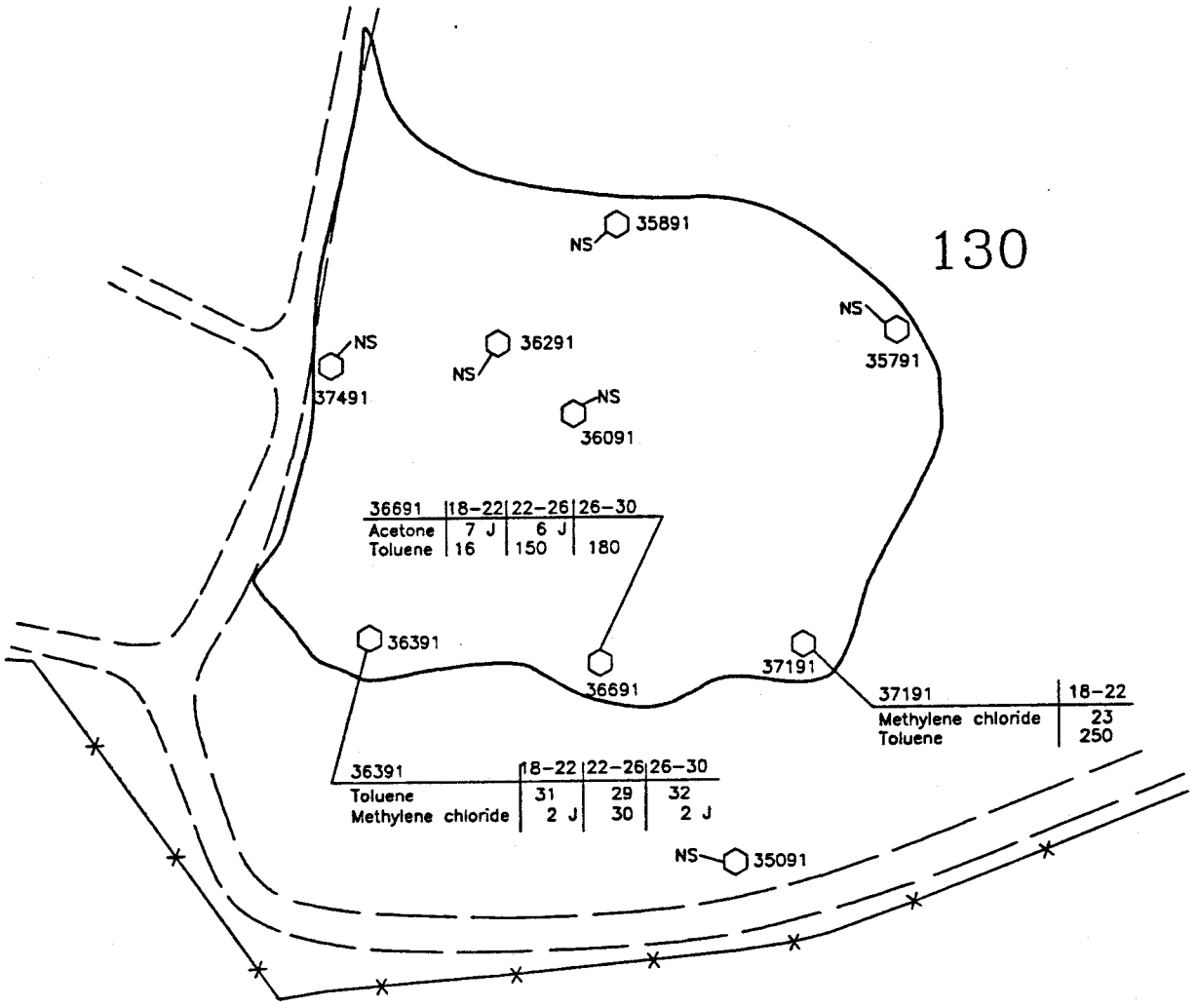
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

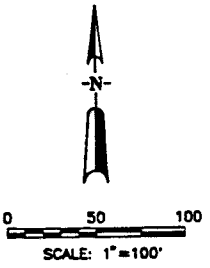
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 130, 10 to 18 Feet

Figure 4-42

OCTOBER 1992





EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 20 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

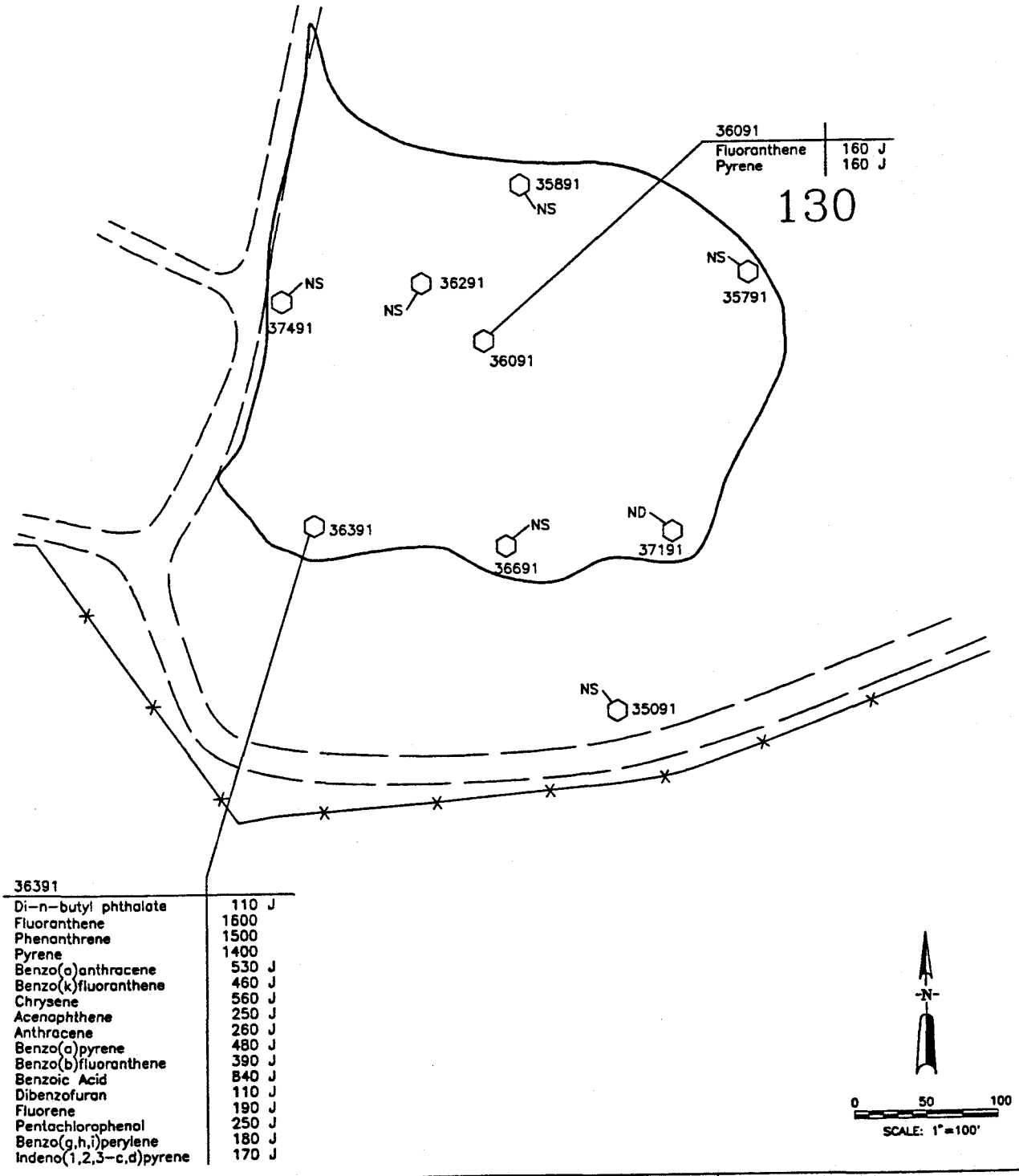
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in IHSS 130, Greater Than 18 Feet

Figure 4-43

OCTOBER 1992



36391	
Di-n-butyl phthalate	110 J
Fluoranthene	1600
Phenanthrene	1500
Pyrene	1400
Benzo(a)anthracene	530 J
Benzo(k)fluoranthene	460 J
Chrysene	560 J
Acenaphthene	250 J
Anthracene	260 J
Benzo(a)pyrene	480 J
Benzo(b)fluoranthene	390 J
Benzoic Acid	840 J
Dibenzofuran	110 J
Fluorene	190 J
Pentachlorophenol	250 J
Benzo(g,h,i)perylene	180 J
Indeno(1,2,3-c,d)pyrene	170 J

EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

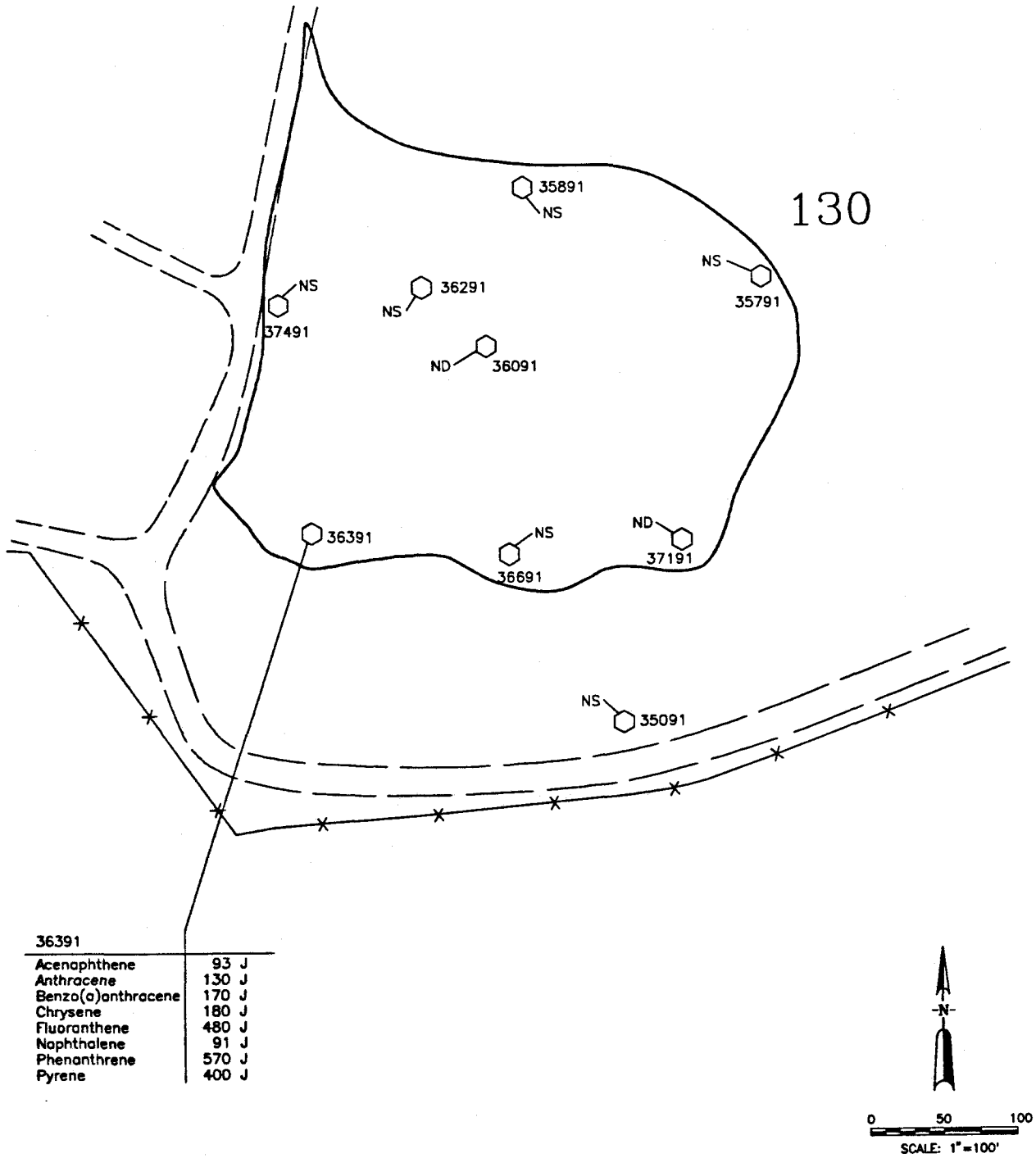
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 130, 0 to 6 Feet

Figure 4-44

OCTOBER 1992



36391	
Acenaphthene	93 J
Anthracene	130 J
Benzo(a)anthracene	170 J
Chrysene	180 J
Fluoranthene	480 J
Naphthalene	91 J
Phenanthrene	570 J
Pyrene	400 J

EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

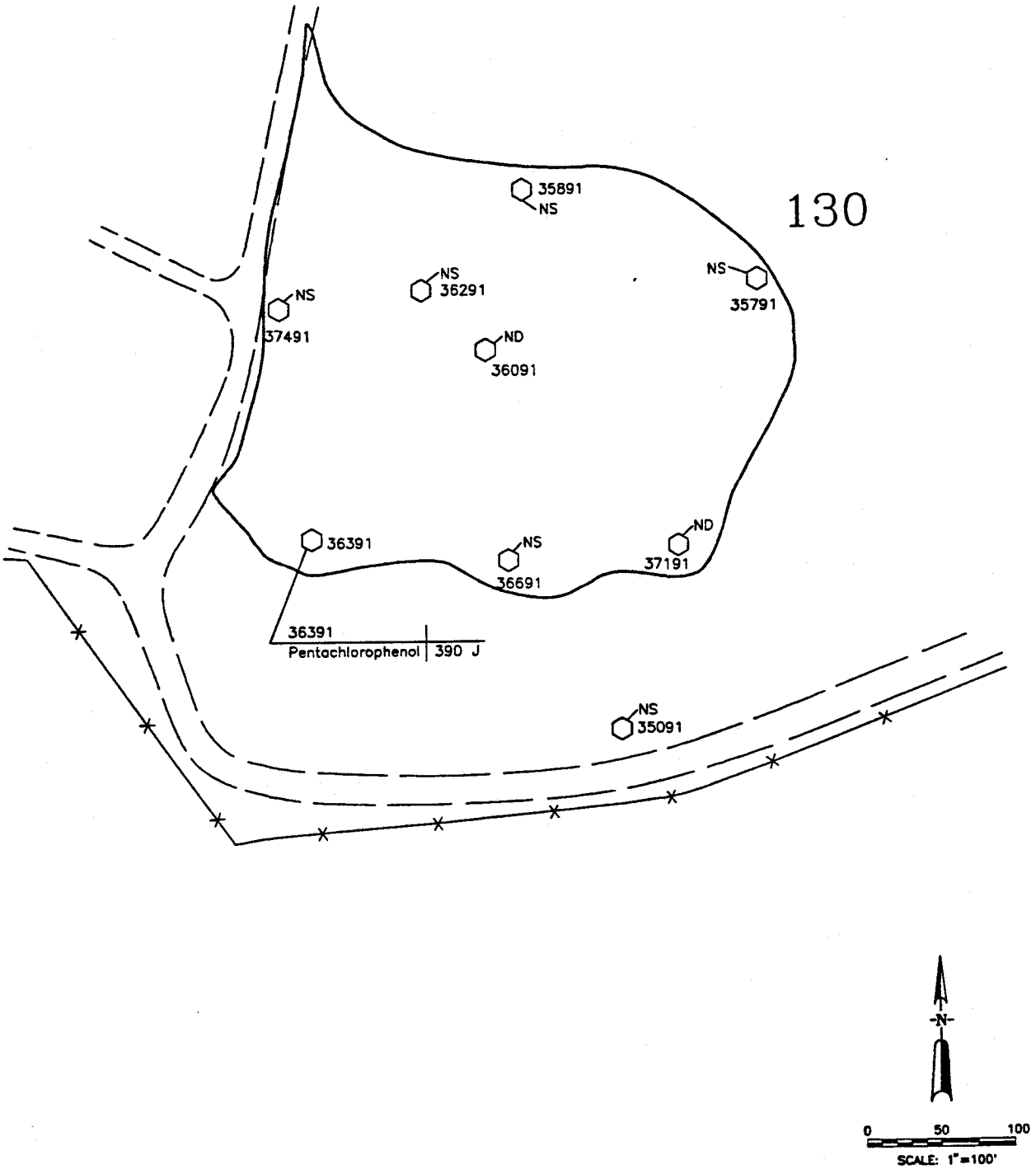
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 130, 6 to 12 Feet

Figure 4-45

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

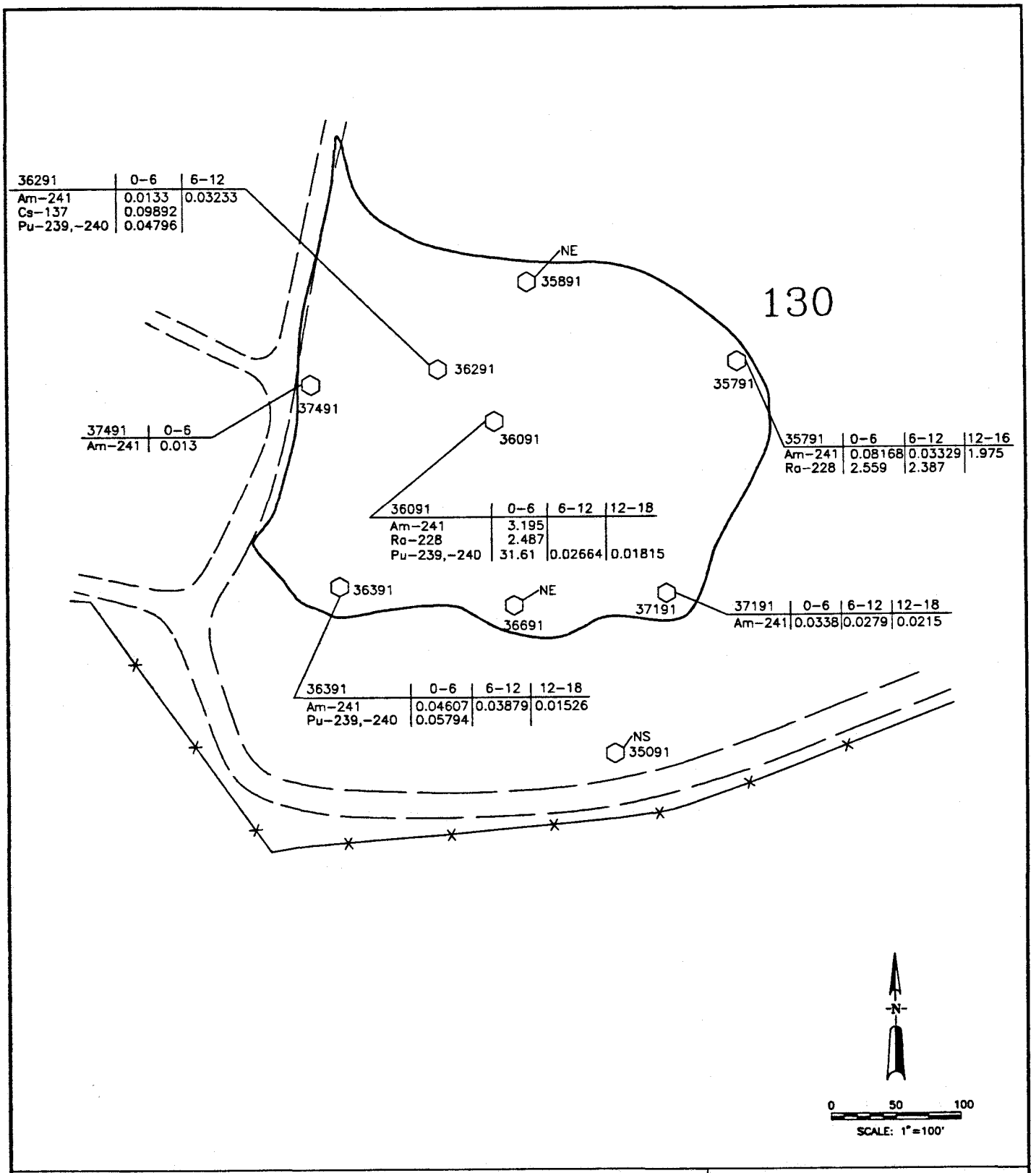
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in IHSS 130, 12 to 18 Feet

Figure 4-46

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE—Analytes Do Not Exceed Backgound
NS—Location Not Sampled

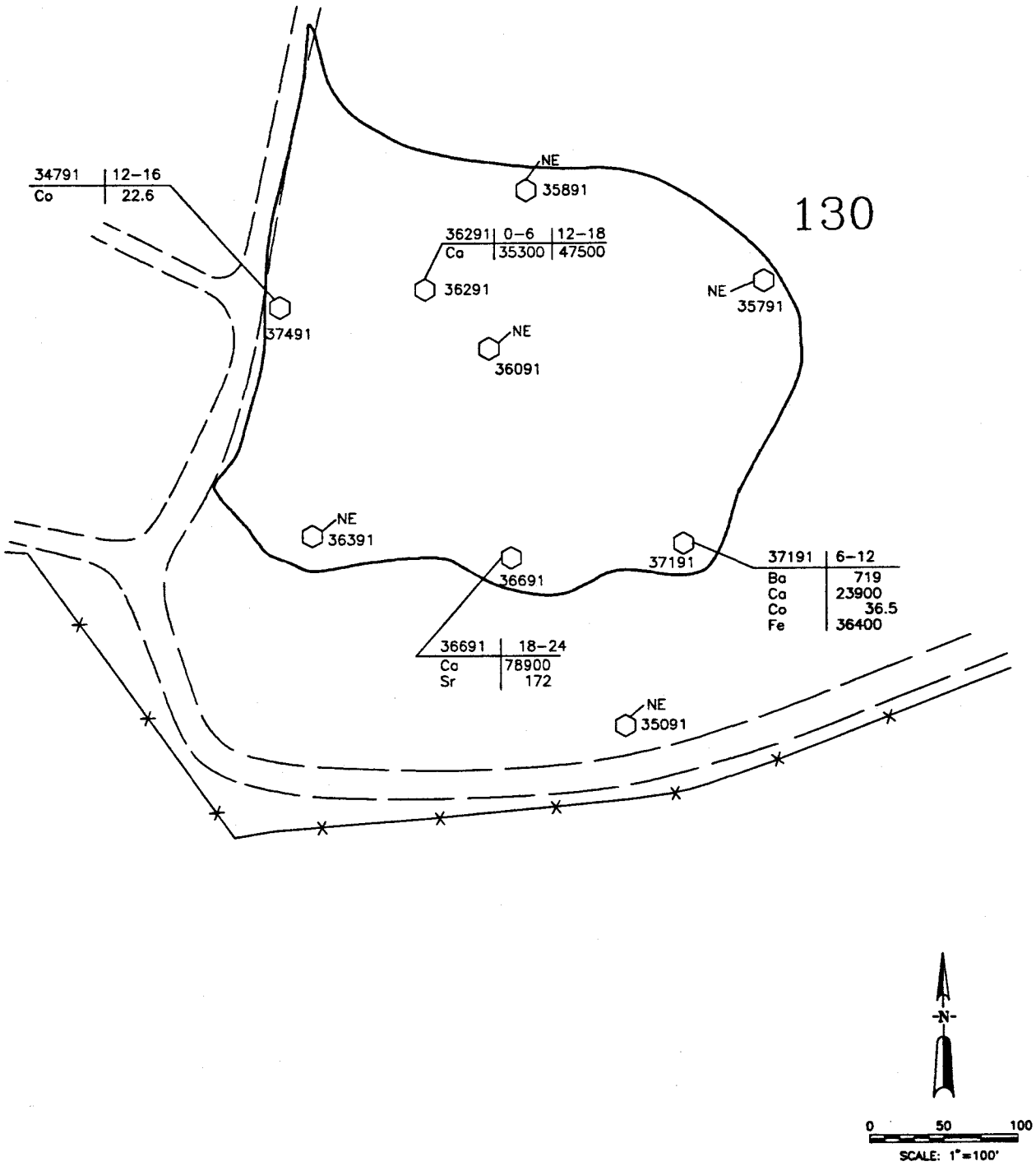
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at IHSS 130

Figure 4-47

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in milligrams per kilogram (mg/kg)

NE–Analytes Do Not Exceed Background

NS–Location Not Sampled

U.S. DEPARTMENT OF ENERGY

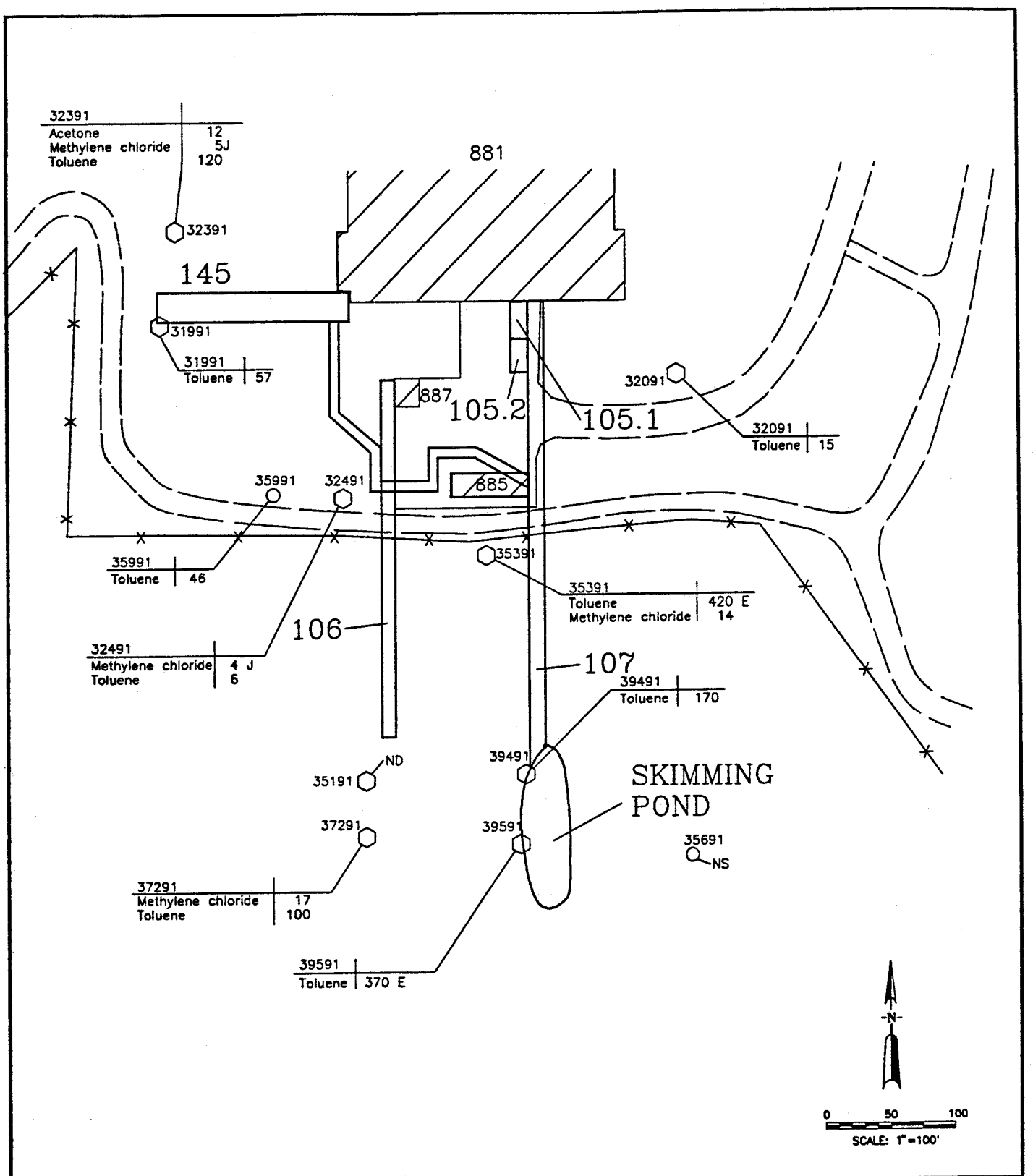
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils at IHSS 130

Figure 4-48

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

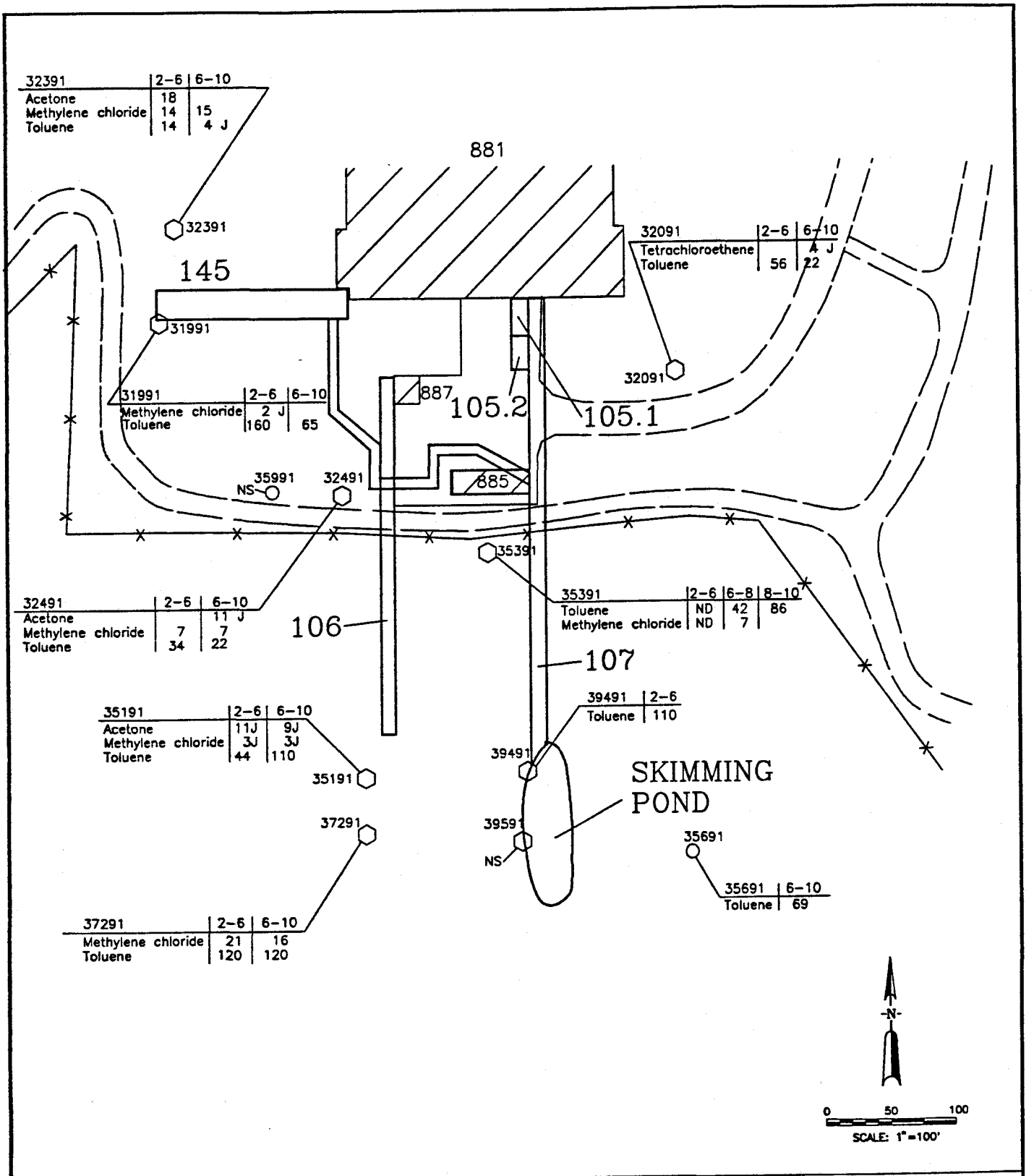
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in the Vicinity of Building 881, 0 to 2 Feet

Figure 4-49

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

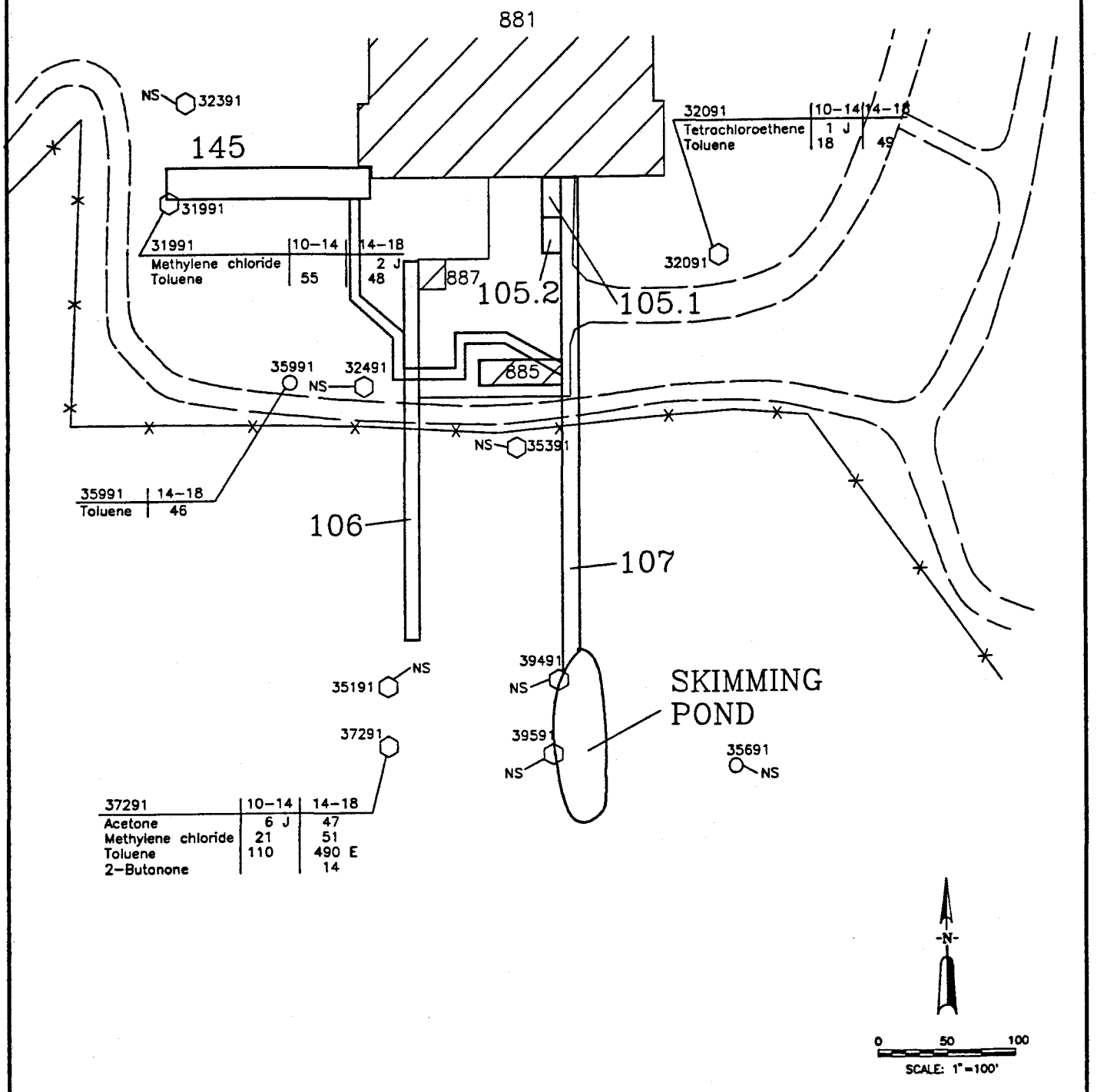
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in the Vicinity of Building 881, 2 to 10 Feet

Figure 4-50

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

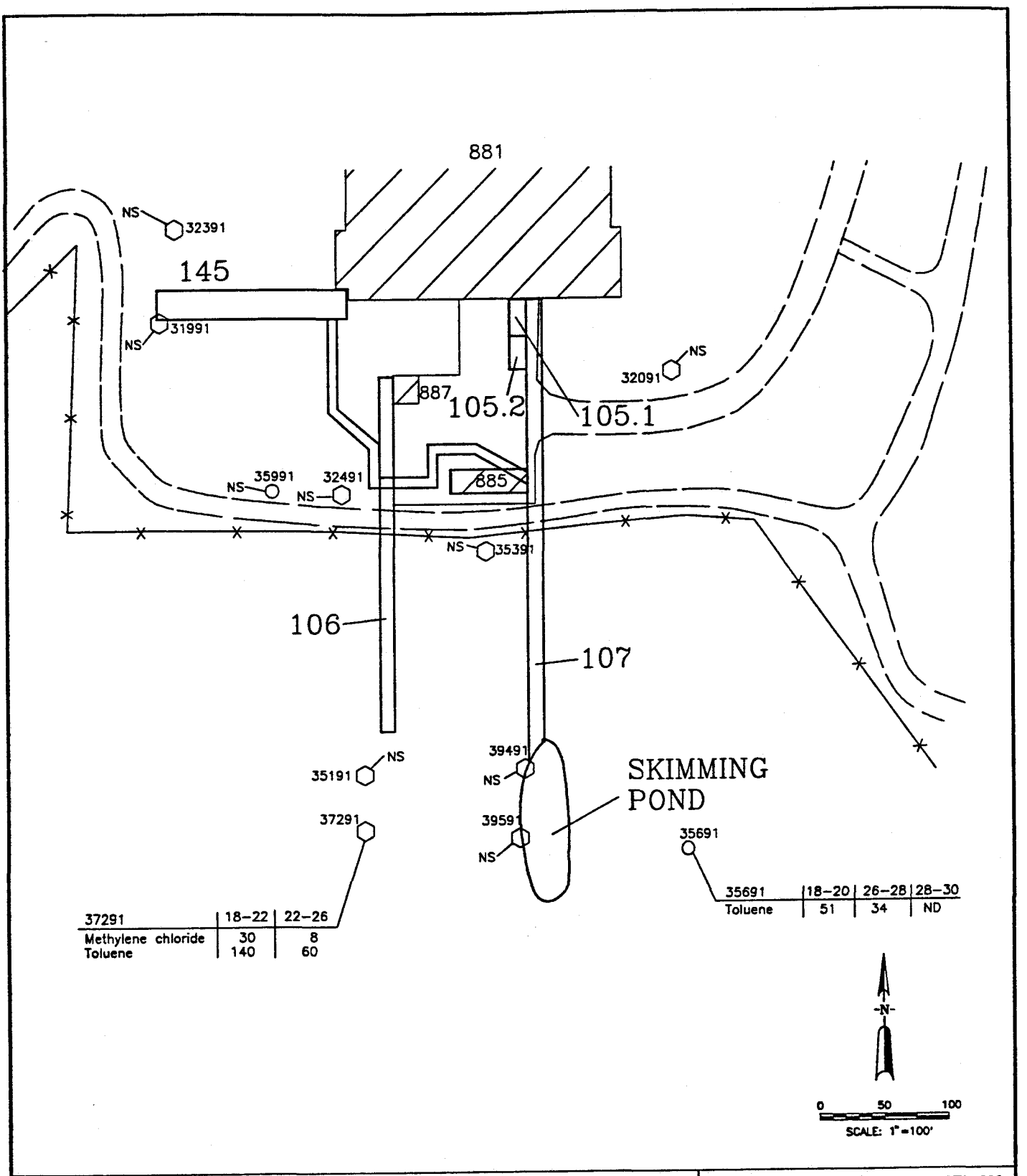
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in the Vicinity of Building 881, 10 to 18 Feet

Figure 4-51

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

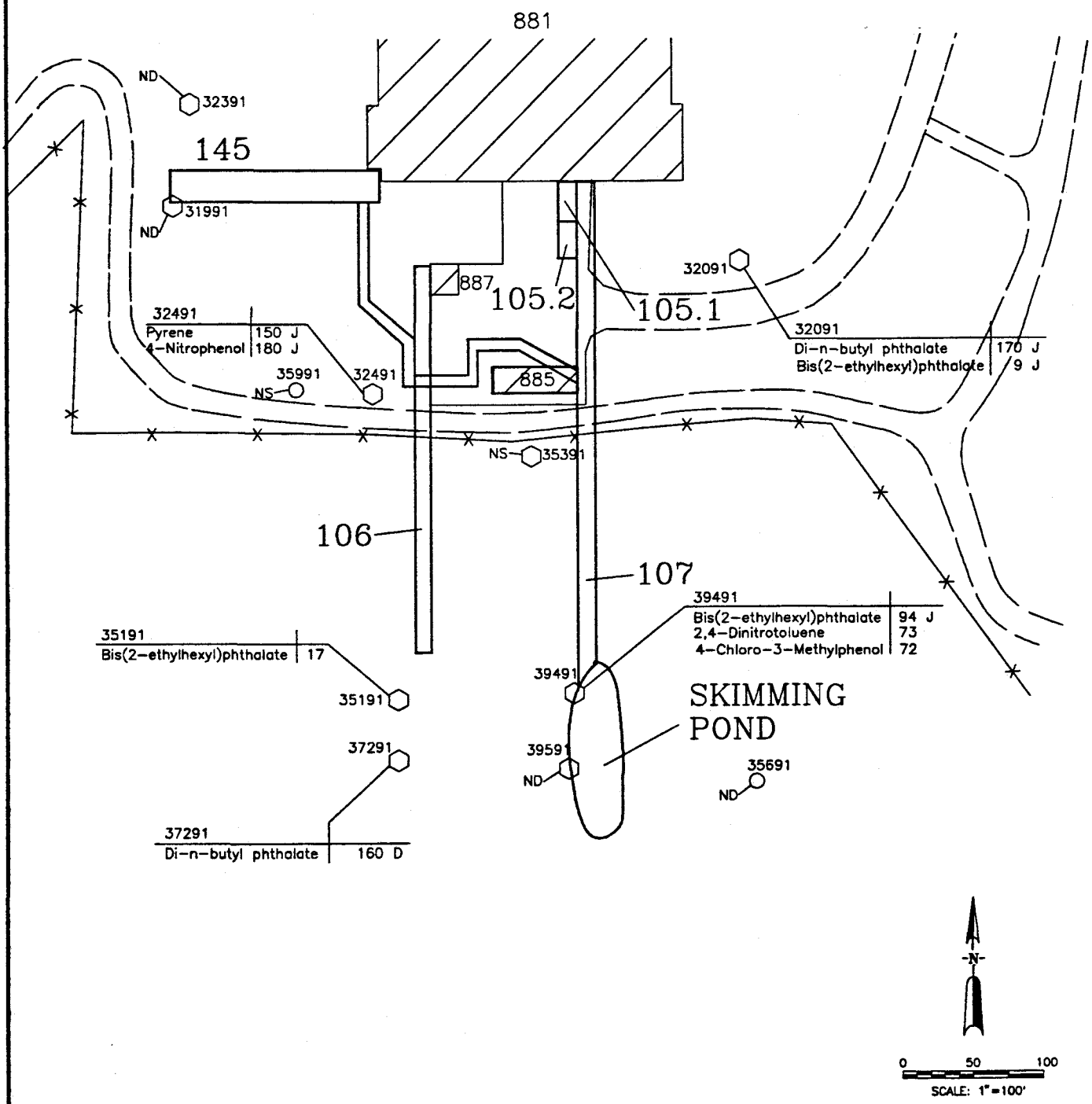
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in the Vicinity of Building 881, Greater Than 18 Feet

Figure 4-52

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

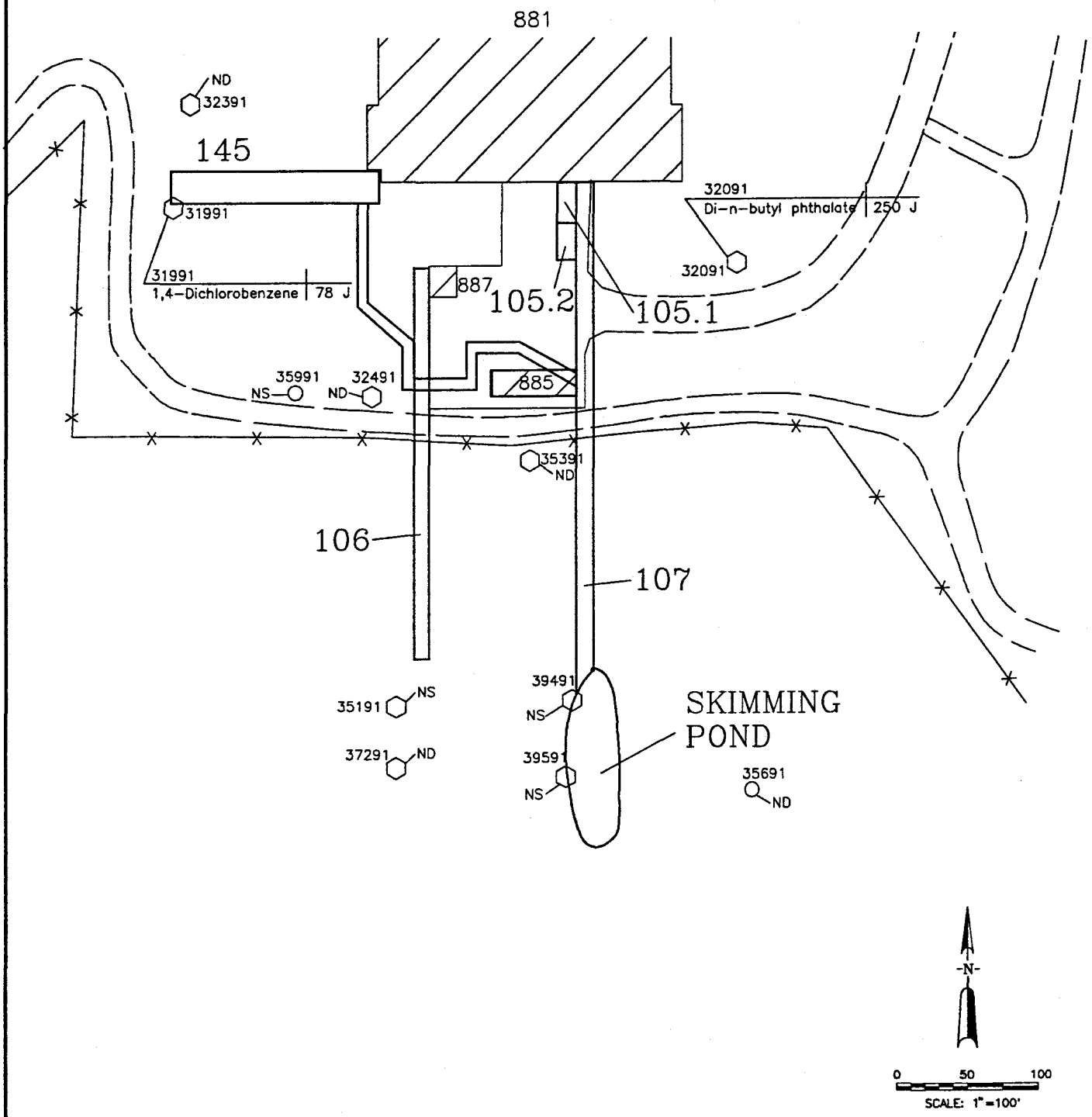
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in the Vicinity of Building 881, 0 to 6 Feet

Figure 4-53

OCTOBER 1992



EXPLANATION

IHSS Boundary

Soil Sample Location Borehole (31891)

Alluvial Monitoring Well (35691)

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

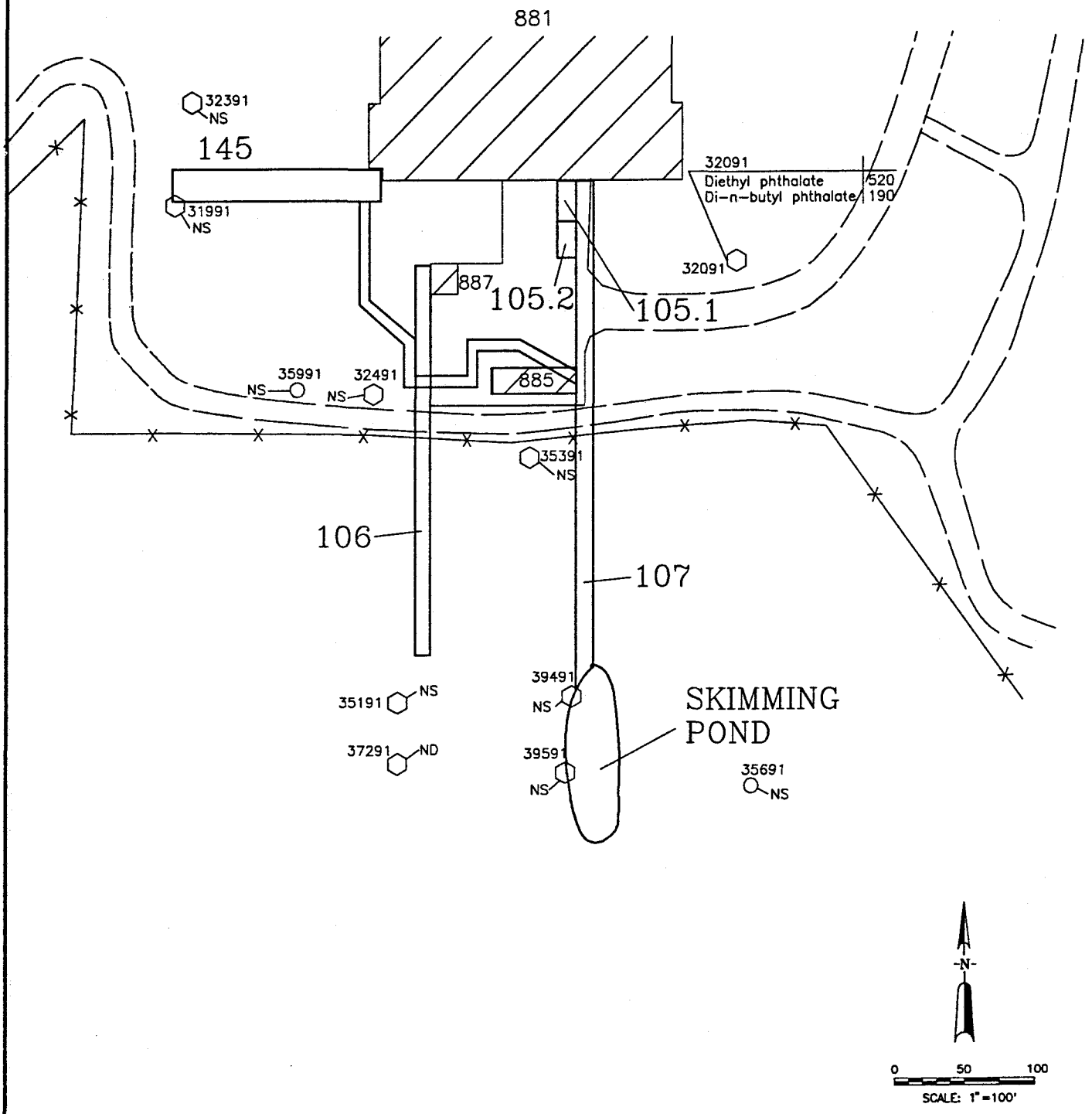
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in the Vicinity of Building 881, 6 to 12 Feet

Figure 4-54

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

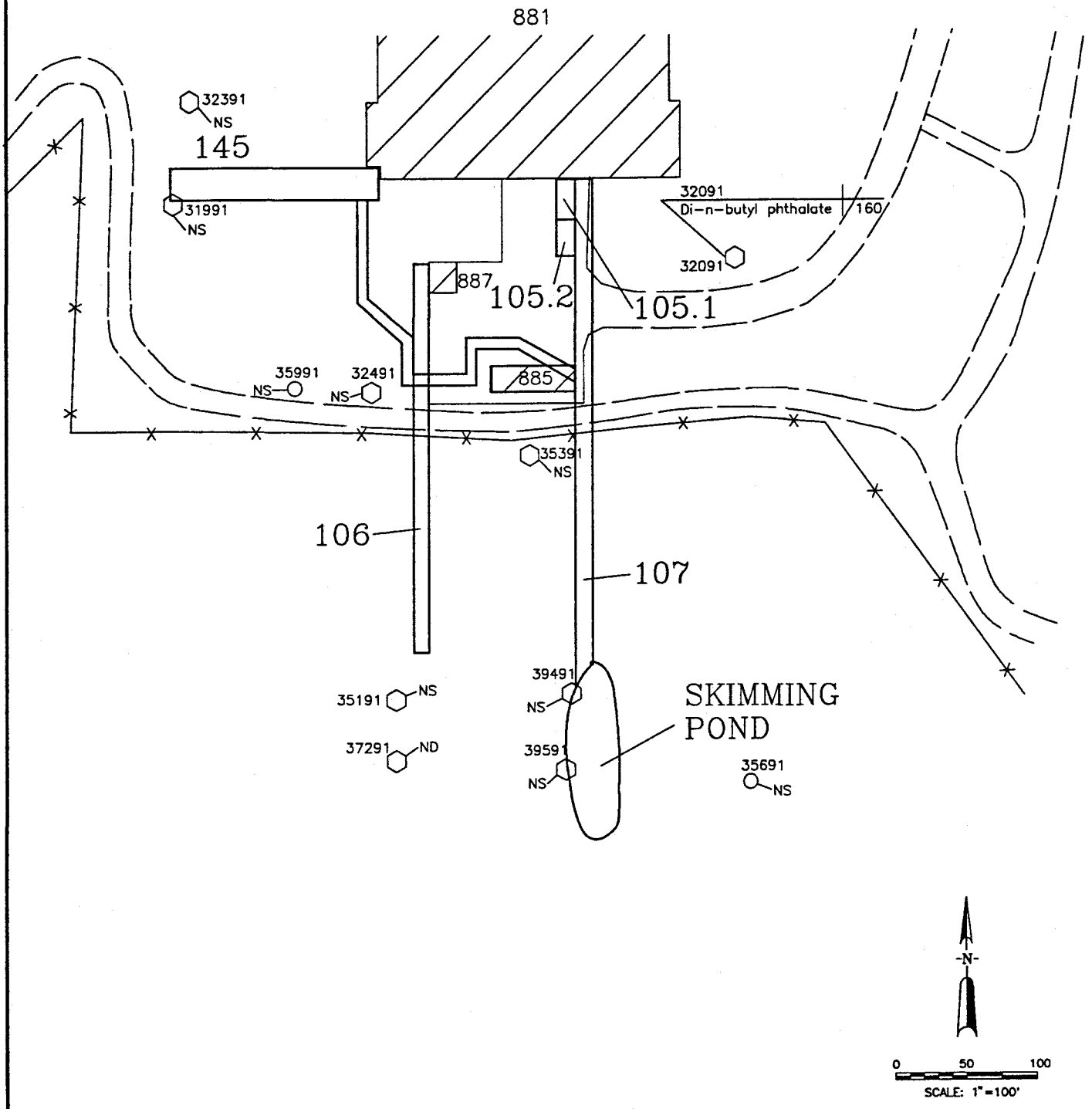
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in the Vicinity of Building 881, 12 to 18 Feet

Figure 4-55

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

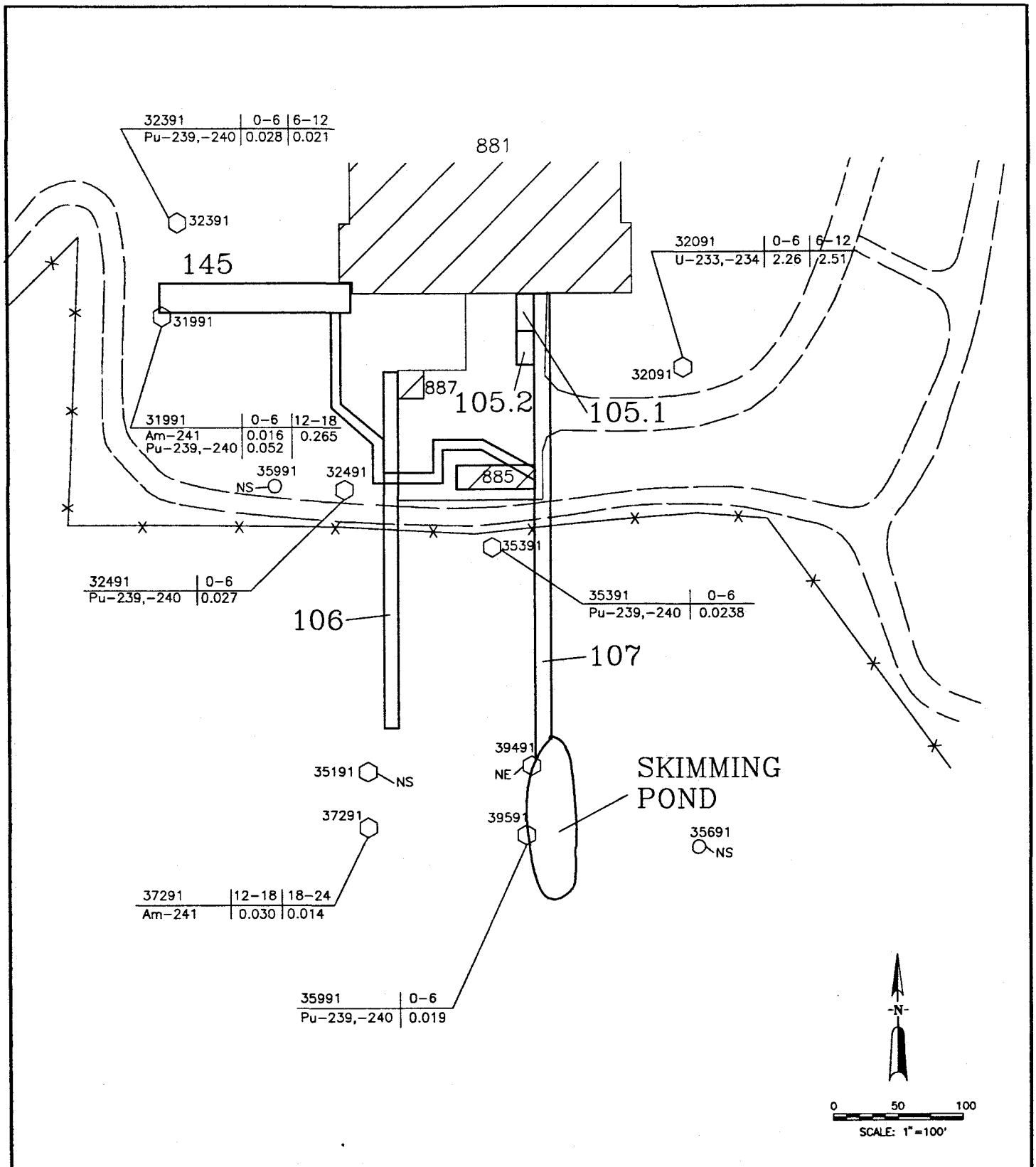
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected in the Vicinity of Building 881, Greater Than 18 Feet

Figure 4–56

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE-Analytes Do Not Exceed Background
NS-Location Not Sampled

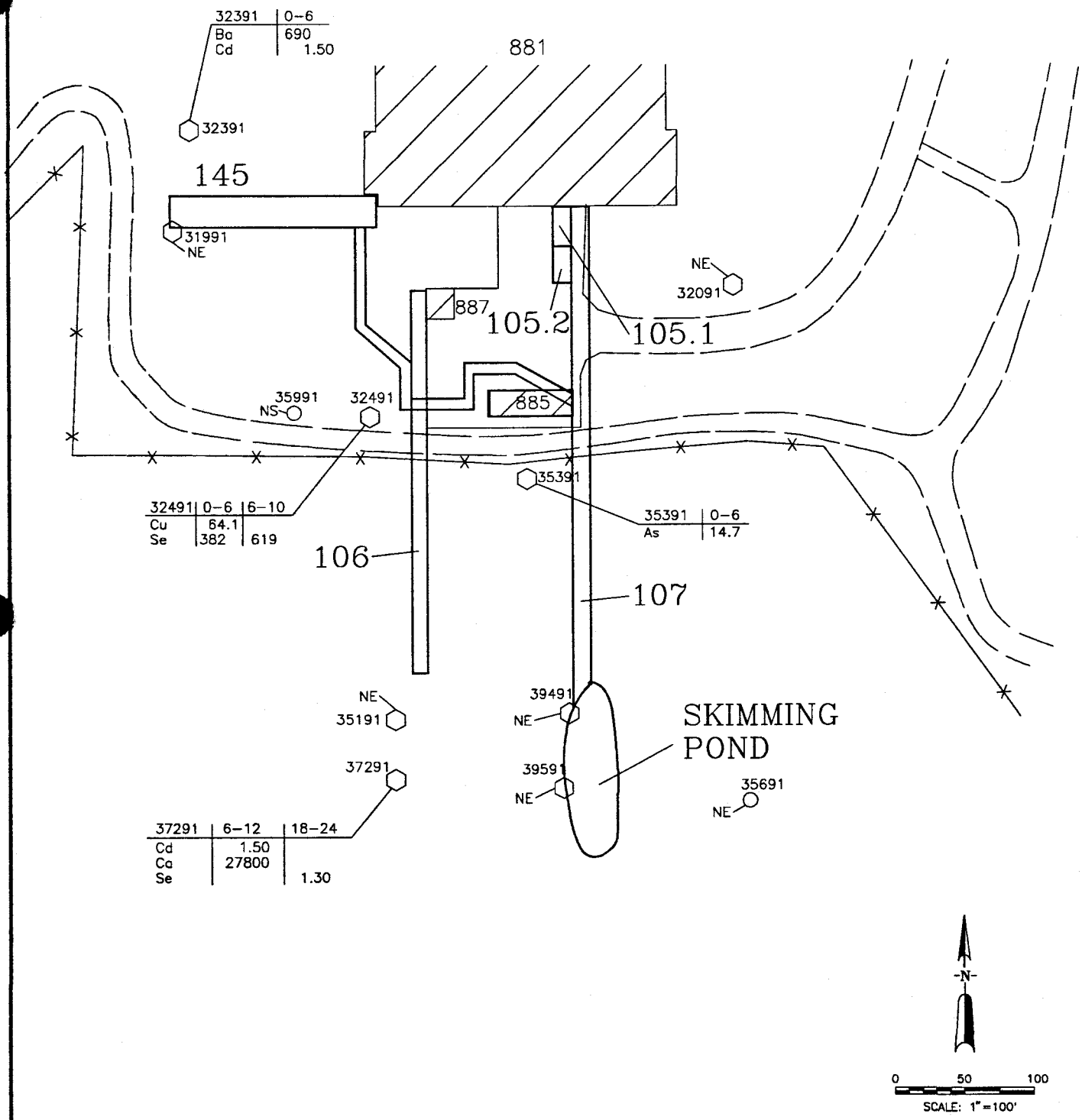
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils in the Vicinity of Building 881

Figure 4-57

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

35691 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Ca | 40 — Concentration in milligrams per kilogram (mg/kg)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

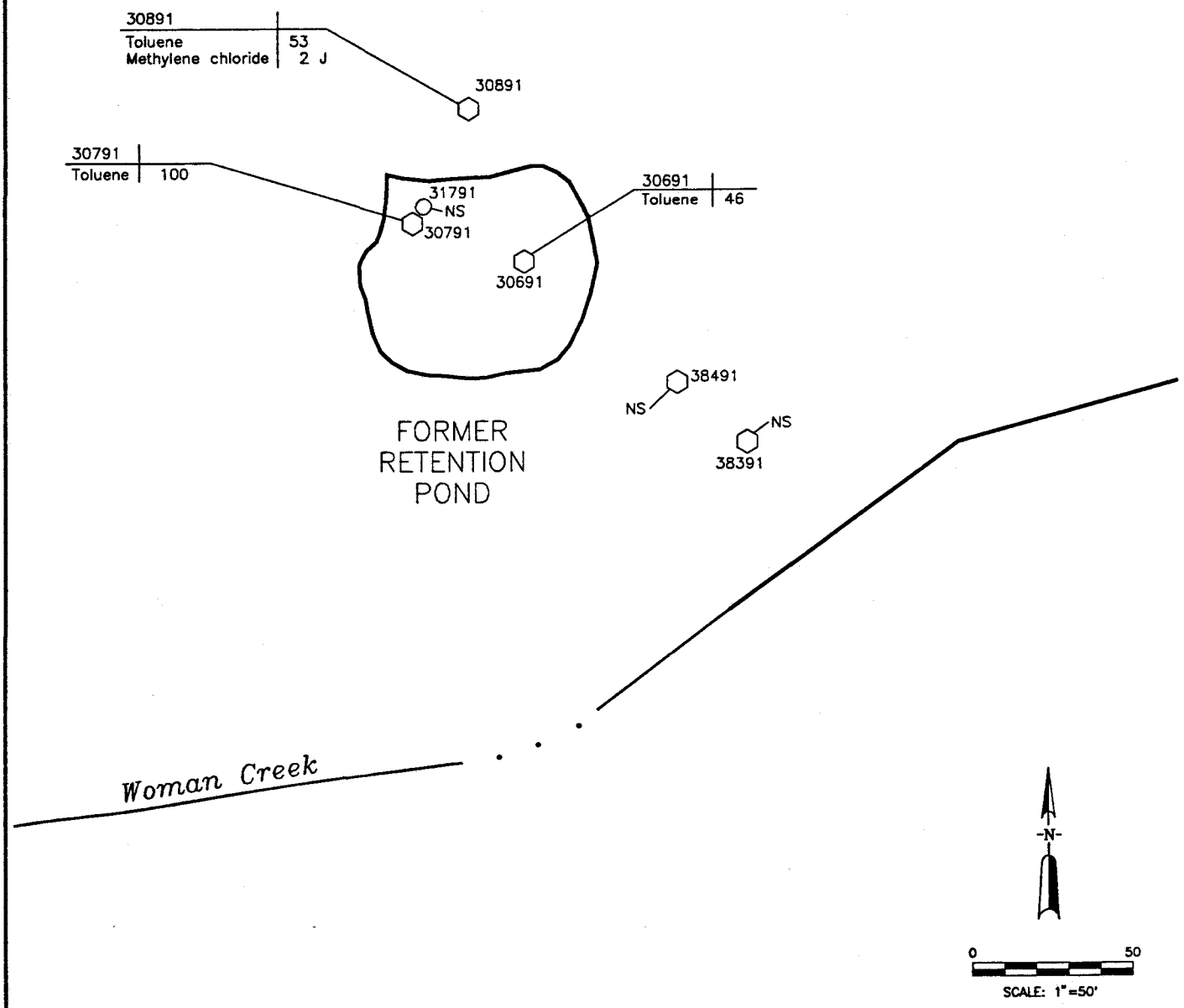
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils in the Vicinity of Building 881

Figure 4-58

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

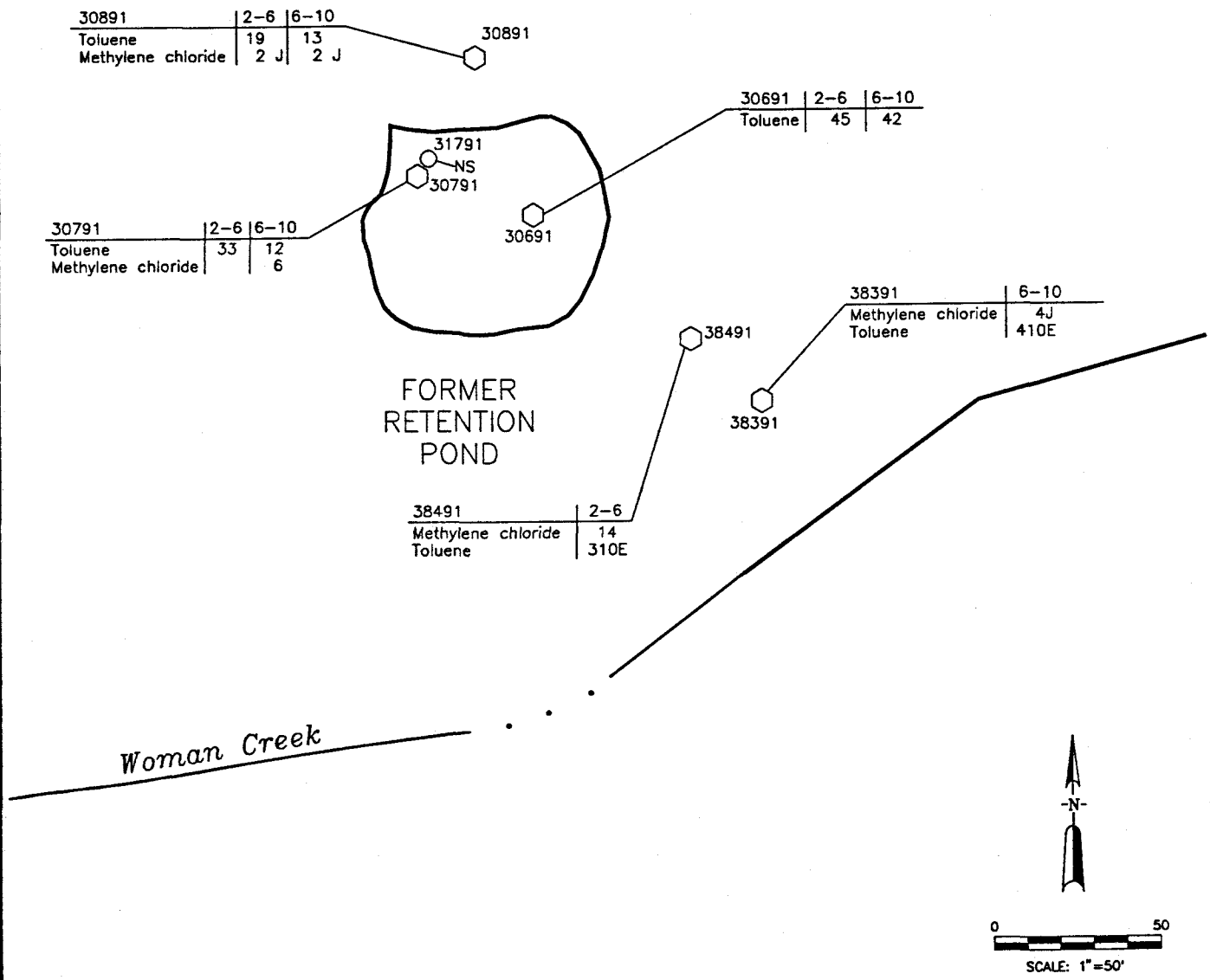
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected at the Former Retention Pond, 0 to 2 Feet

Figure 4-59

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

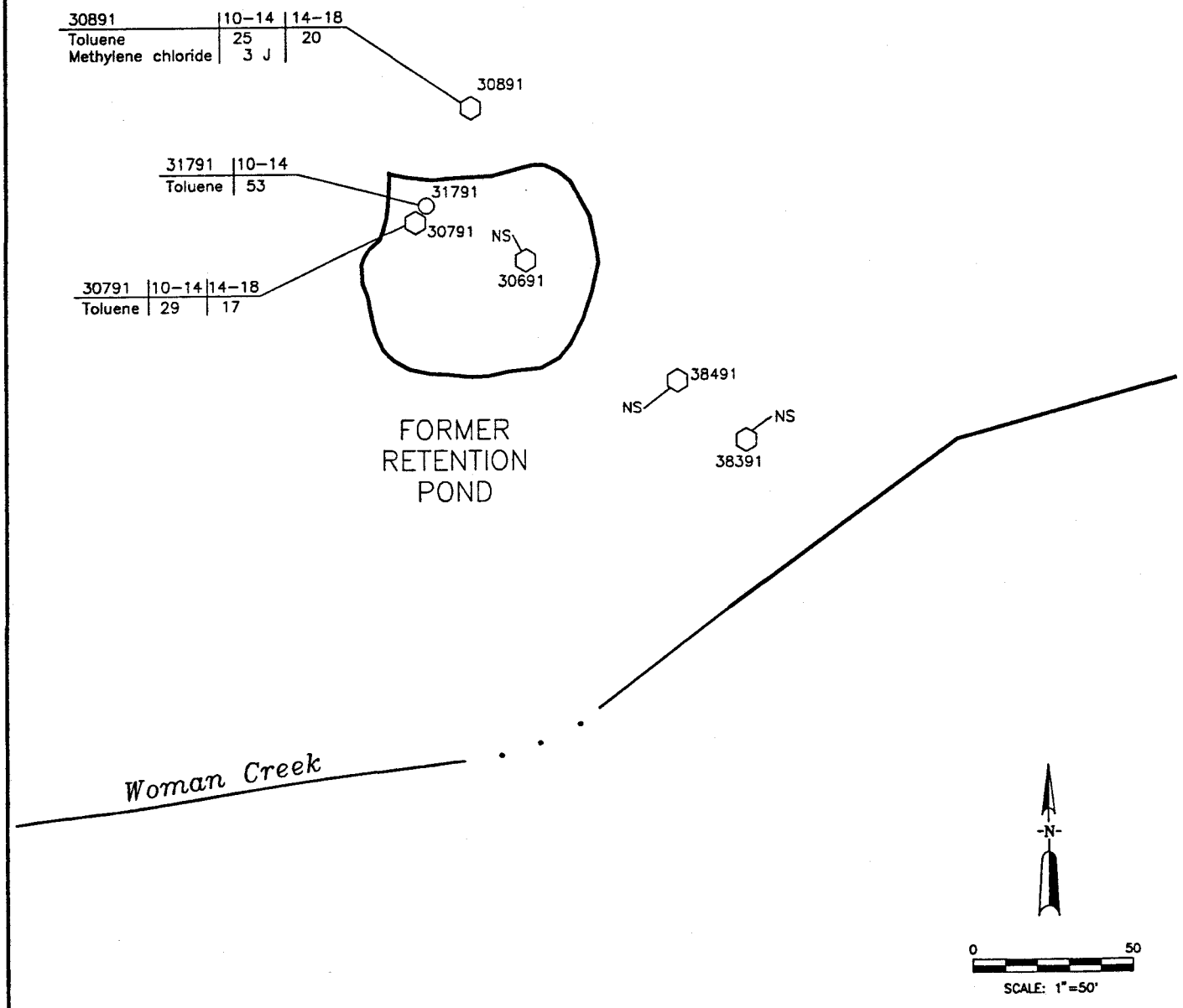
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected at the Former Retention Pond, 2 to 10 Feet

Figure 4-60

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

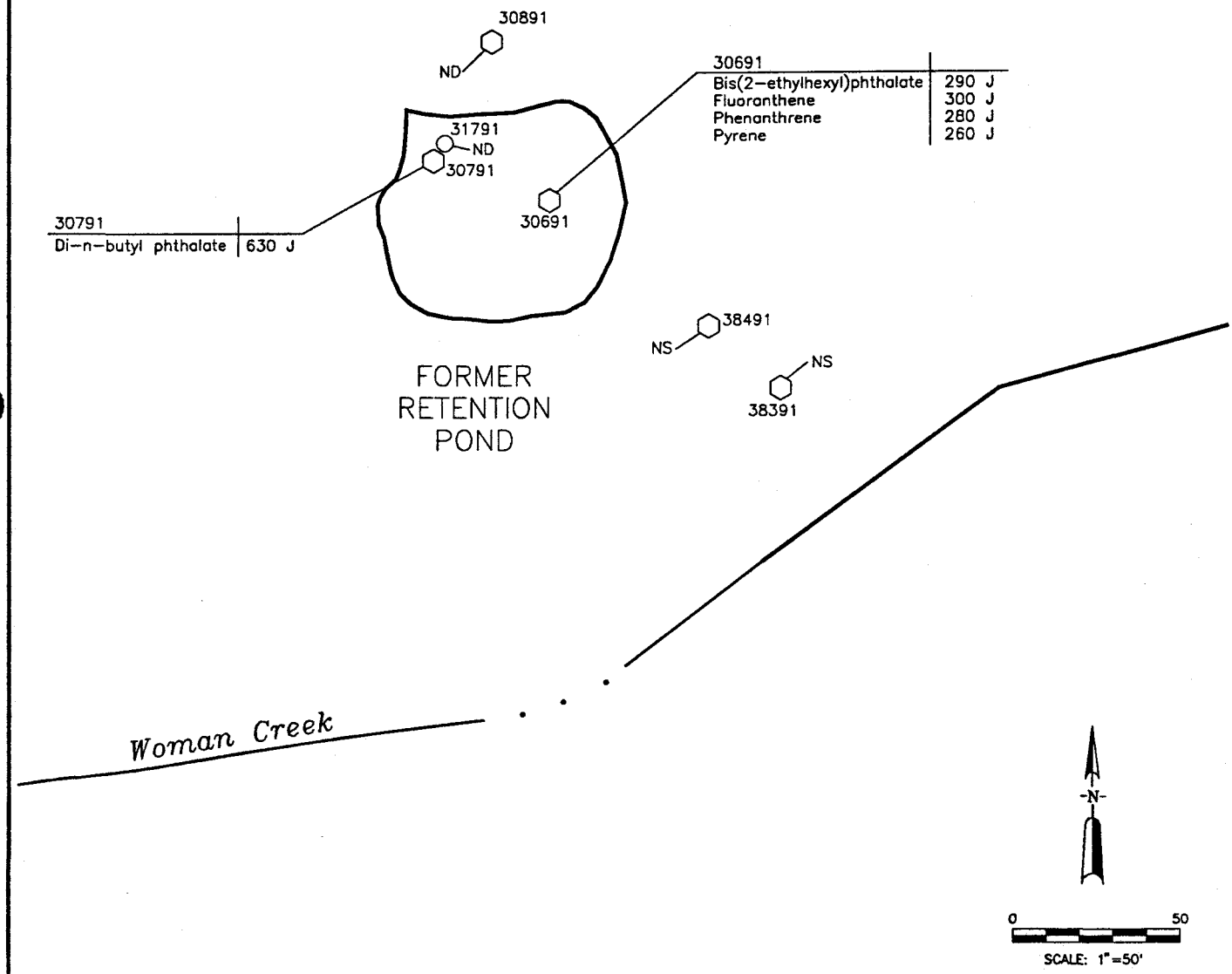
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected at the Retention Pond, 10 to 18 Feet

Figure 4–61

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS-Location Not Sampled
ND-Analytes Not Detected

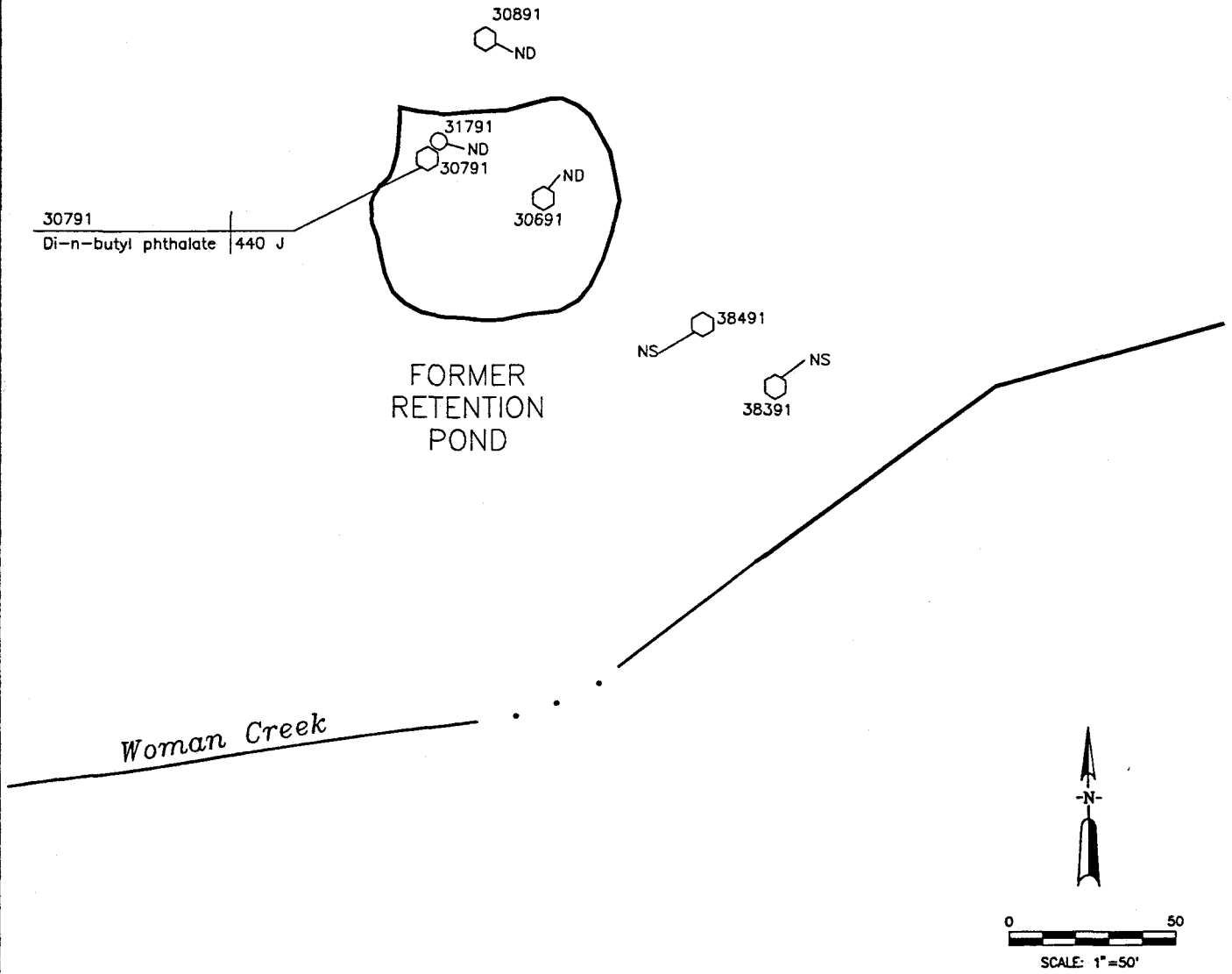
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected at the Former Retention Pond, 0 to 6 Feet

Figure 4-62

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

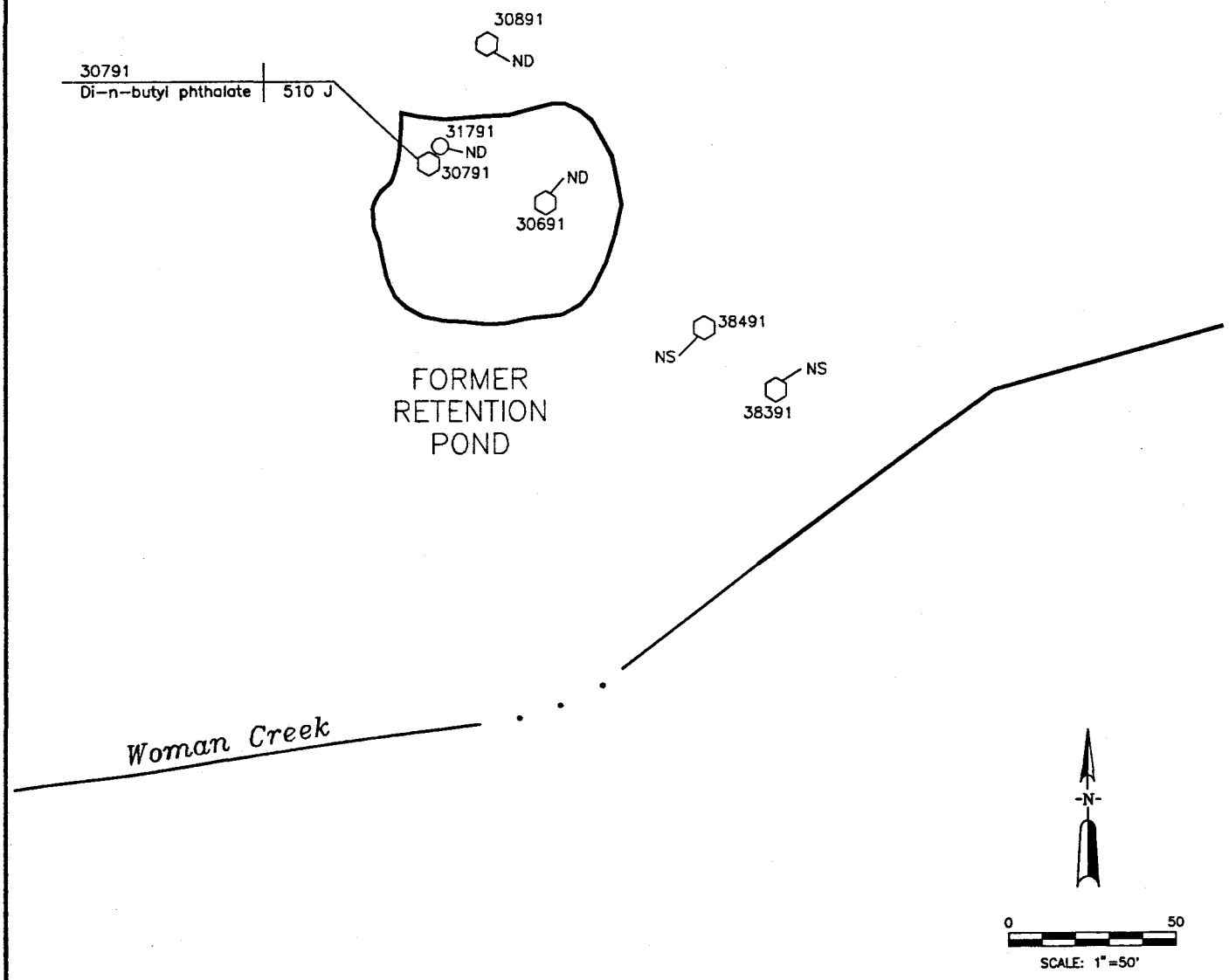
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected at the Former Retention Pond 6 to 12 Feet

Figure 4-63

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6–10 — Depth Interval in Feet

Analyte — Pyrene | 2.0 — Concentration in micrograms per kilogram (ug/kg)

NS–Location Not Sampled
ND–Analytes Not Detected

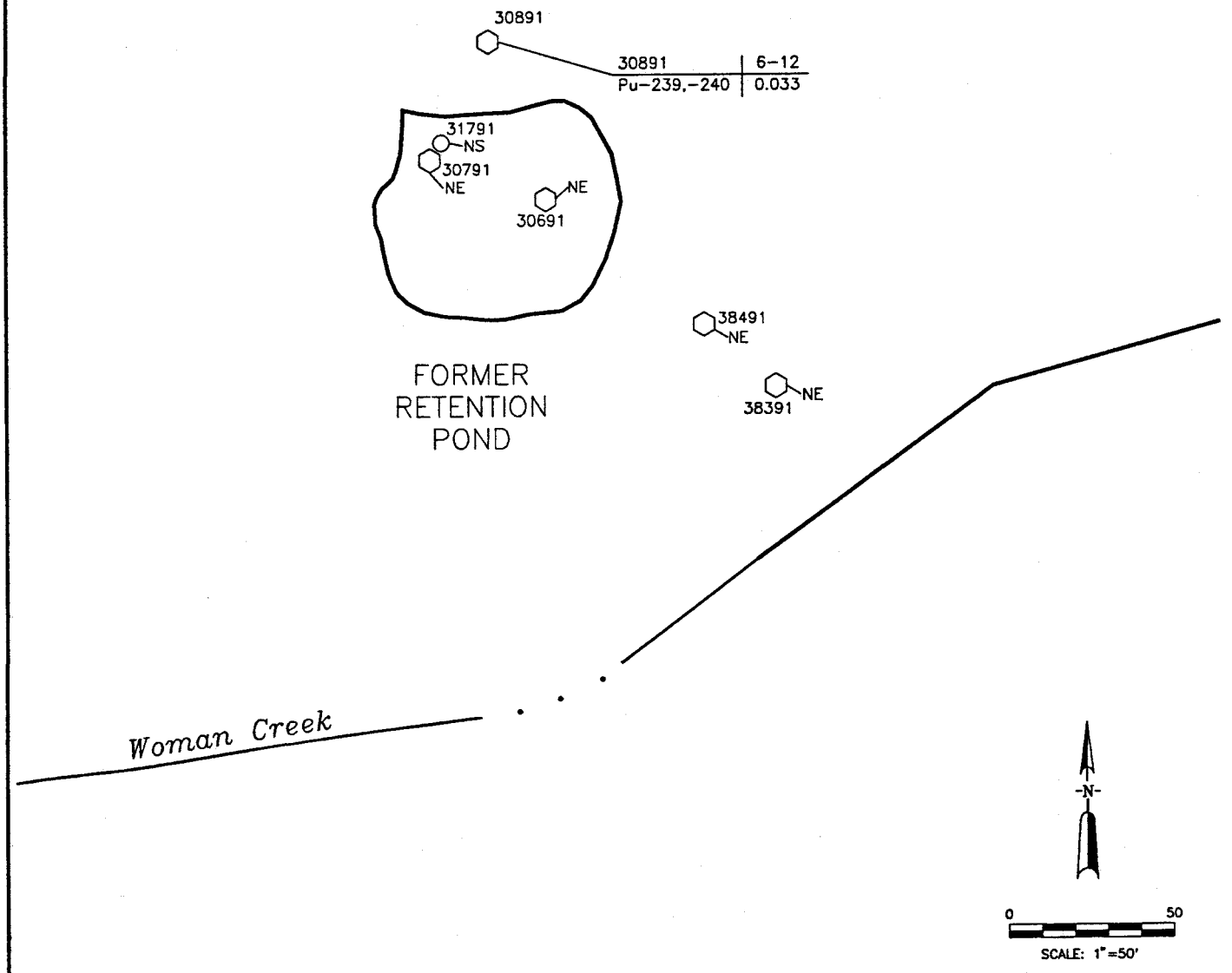
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Semivolatile Organic Compounds Detected at the Former Retention Pond, 12 to 18 Feet

Figure 4-64

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — U-233,234 | 0.01 — Concentration in picocuries per gram (pCi/g)

NE—Analytes Do Not Exceed Background
NS—Location Not Sampled

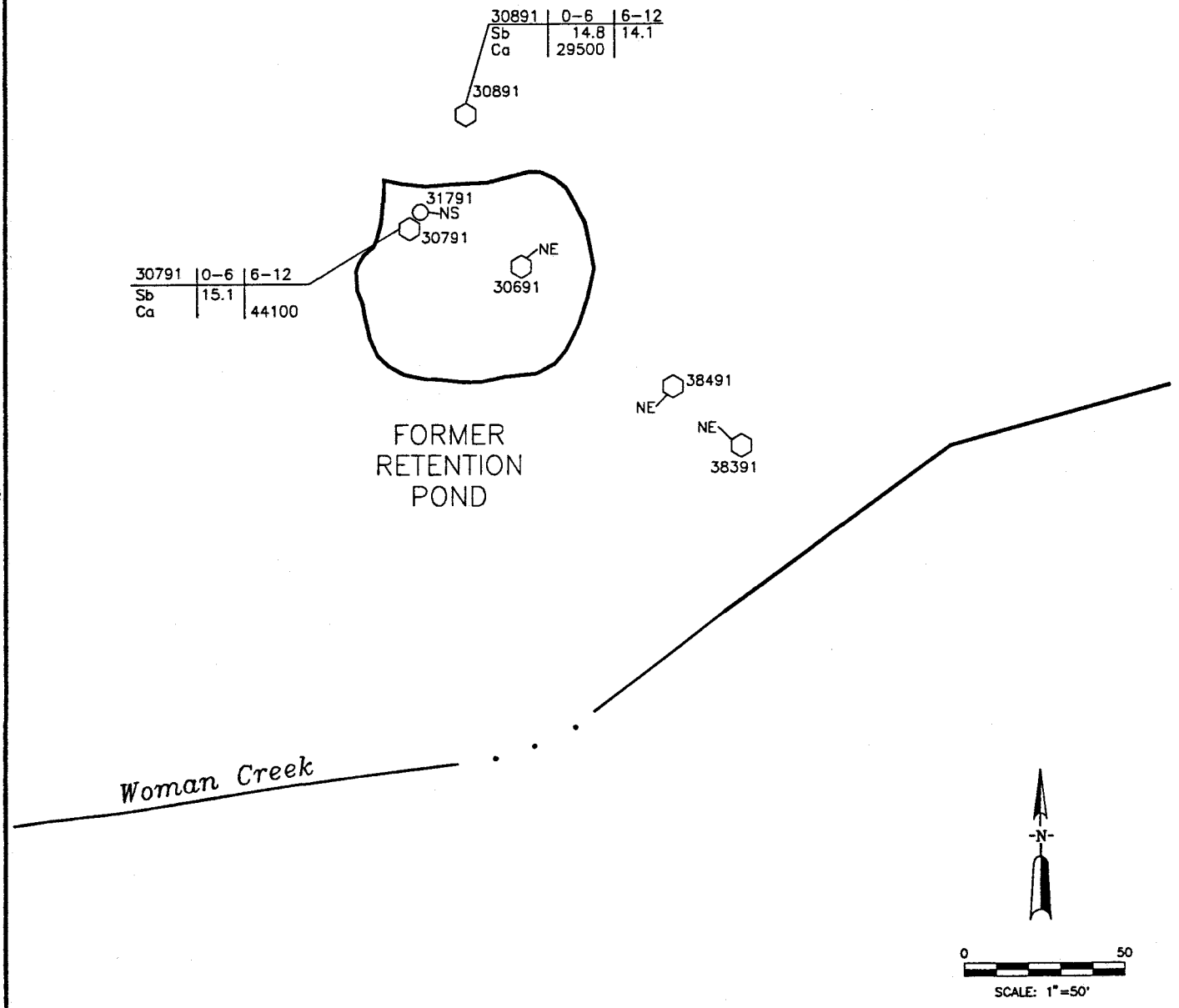
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in Soils at the Former Retention Pond

Figure 4-65

OCTOBER 1992



EXPLANATION

IHSS Boundary

31891 Soil Sample Location Borehole

31791 Alluvial Monitoring Well

Stream or Ditch

Road

Fence

Location — 36491 | 6-10 — Depth Interval in Feet

Analyte — Toluene | 200 — Concentration in milligrams per kilogram (mg/kg)

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

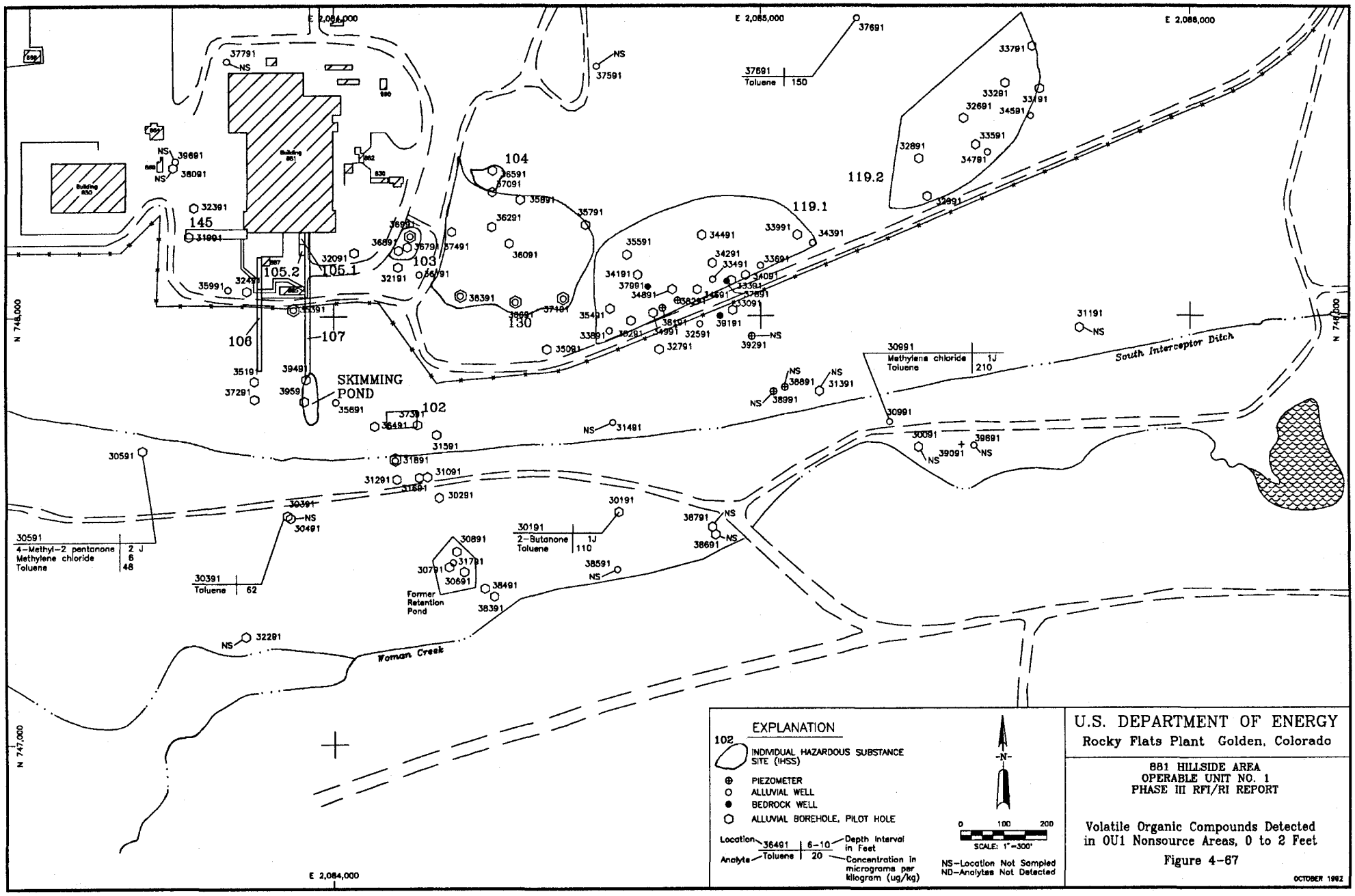
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

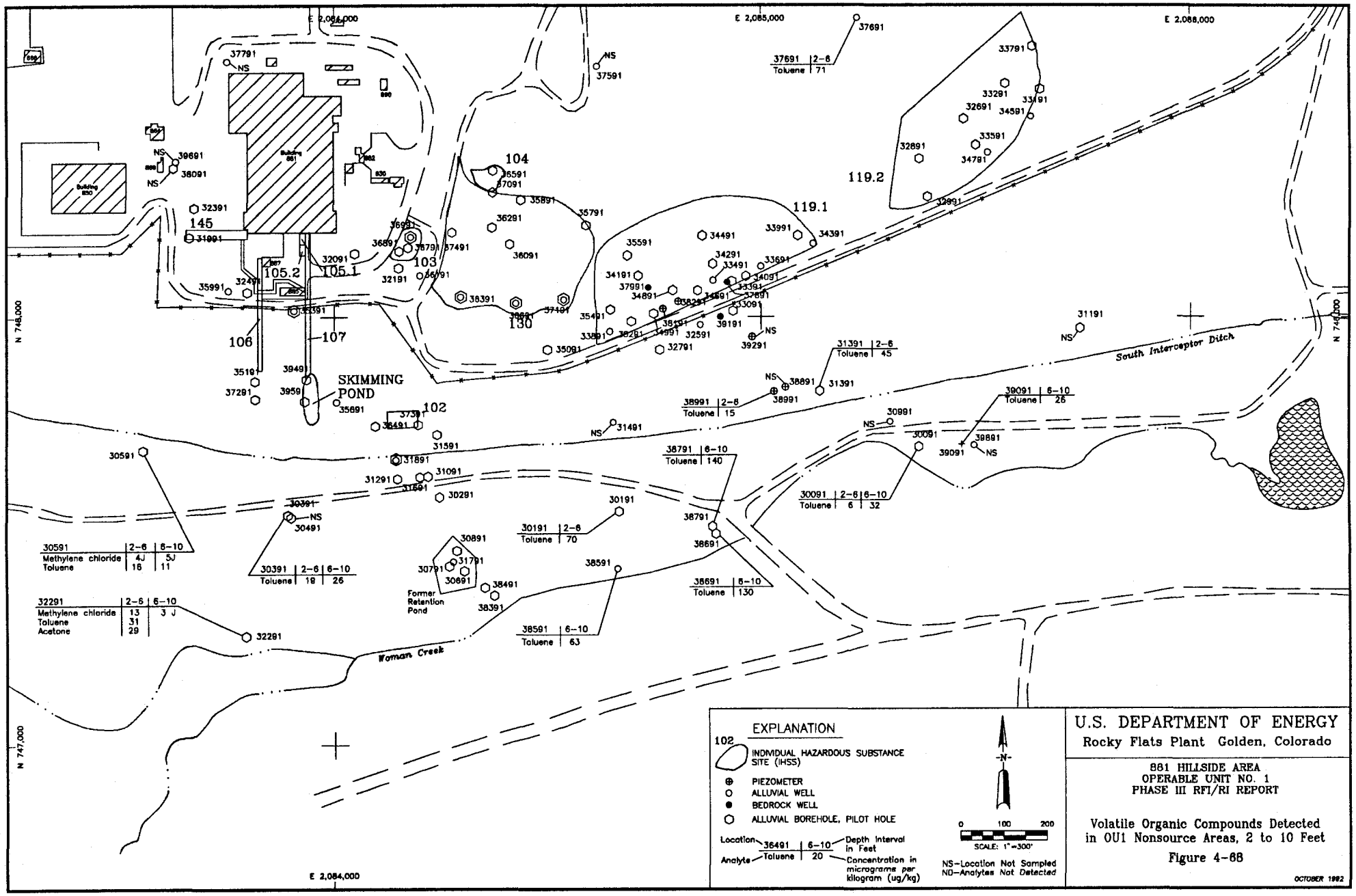
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in Soils at the Former Retention Pond

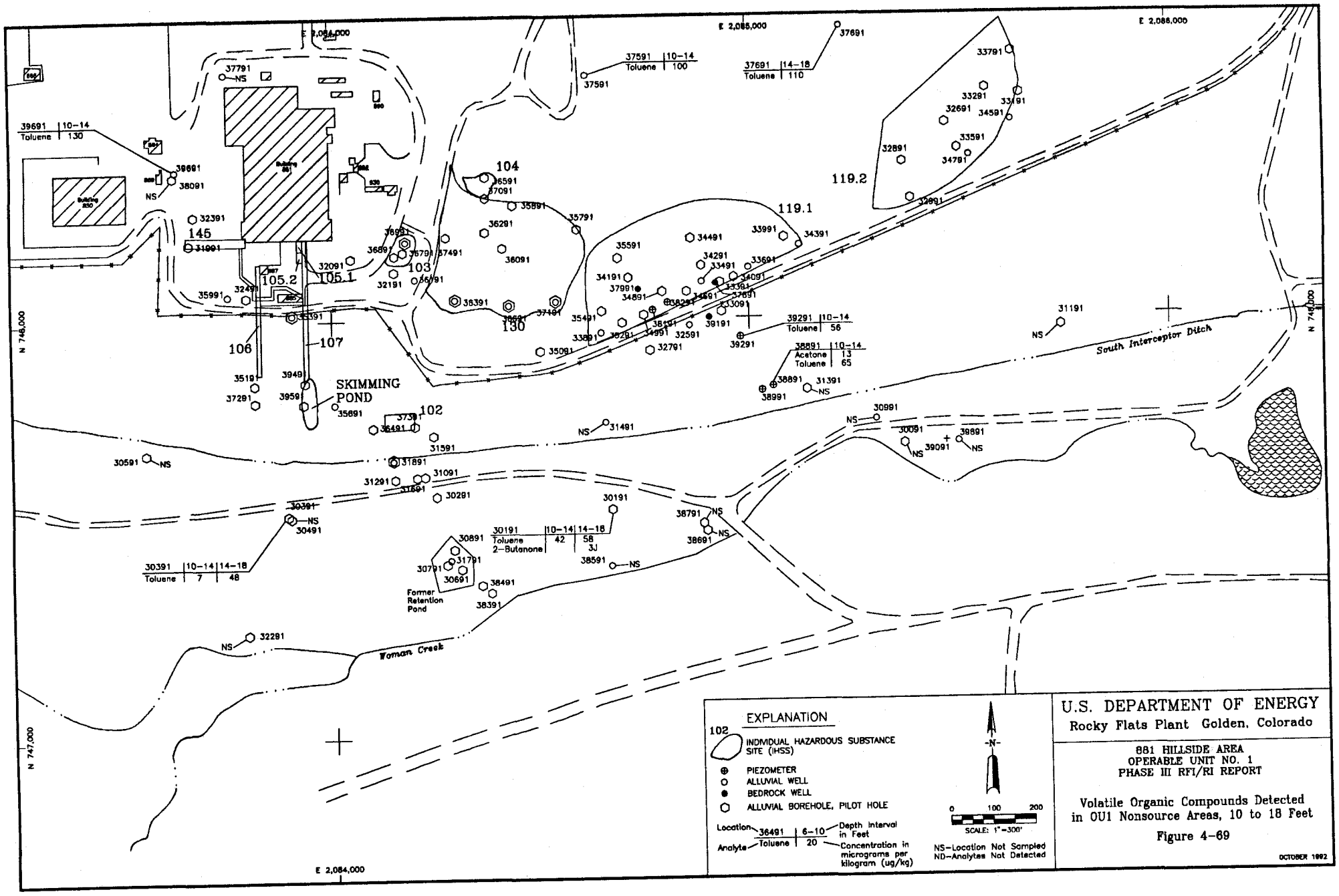
Figure 4-66

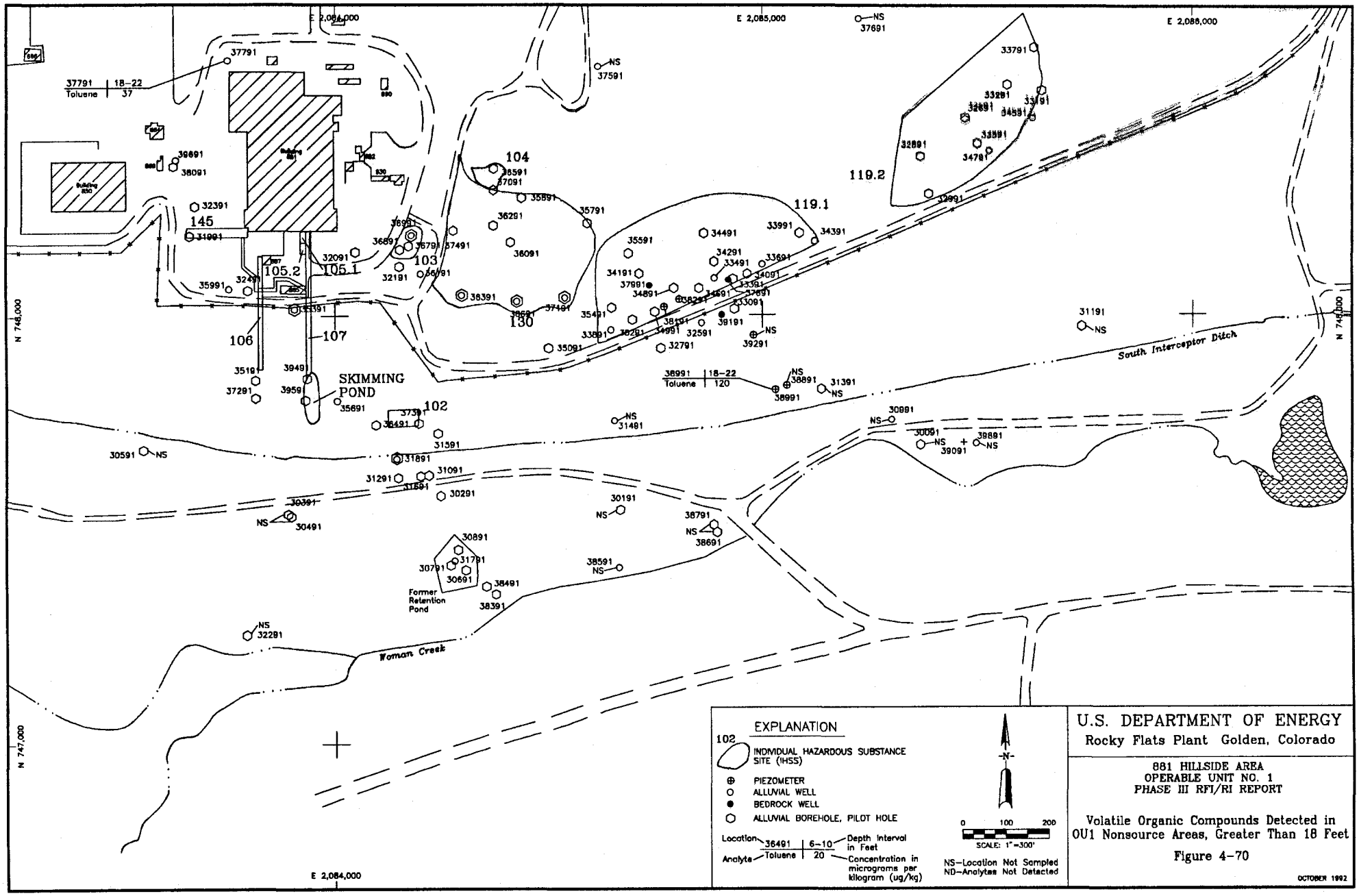
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 850
Building 881
SKIMMING POND
Former Retention Pond
Woman Creek
South Interceptor Ditch
102
103
104
105.1
105.2
106
107
119.1
119.2
130
145
37691
Toluene 150
30991
Methylene chloride 1J
Toluene 210
30191
2-Butanone 1J
Toluene 110
30591
4-Methyl-2 pentanone 2 J
Methylene chloride 6
Toluene 48
30391
Toluene 62
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 36491 6-10 Depth Interval in Feet
Analyte Toluene 20 Concentration in micrograms per kilogram (ug/kg)
NS-Location Not Sampled
ND-Analytes Not Detected
-N-
0 100 200
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Volatile Organic Compounds Detected in OU1 Nonsource Areas, 0 to 2 Feet
Figure 4-67
OCTOBER 1992



E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
SKIMMING POND
South Interceptor Ditch
Woman Creek
Former Retention Pond
145
105.2
105.1
103
104
130
102
106
107
119.1
119.2
37691 | 2-6
Toluene | 71
31391 | 2-6
Toluene | 45
38991 | 2-6
Toluene | 15
39091 | 6-10
Toluene | 26
38791 | 6-10
Toluene | 140
30091 | 2-6 | 6-10
Toluene | 6 | 32
30191 | 2-6
Toluene | 70
38691 | 6-10
Toluene | 130
38591 | 6-10
Toluene | 63
30391 | 2-6 | 6-10
Toluene | 19 | 26
30591 | 2-6 | 6-10
Methylene chloride | 4J | 5J
Toluene | 16 | 11
32291 | 2-6 | 6-10
Methylene chloride | 13 | 3 J
Toluene | 31
Acetone | 29
EXPLANATION
102 INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 36491 | 6-10 Depth Interval in Feet
Analyte Toluene | 20 Concentration in micrograms per kilogram (ug/kg)
-N-
0 100 200
SCALE: 1"=300'
NS-Location Not Sampled
ND-Analytes Not Detected
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Volatile Organic Compounds Detected in OU1 Nonsource Areas, 2 to 10 Feet
Figure 4-68
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 850
Building 881
SKIMMING POND
Former Retention Pond
Woman Creek
South Interceptor Ditch
102
103
104
105.1
105.2
106
107
119.1
119.2
130
145
39691 | 10-14
Toluene | 130
37591 | 10-14
Toluene | 100
37691 | 14-18
Toluene | 110
39291 | 10-14
Toluene | 56
38891 | 10-14
Acetone | 13
Toluene | 65
30191 | 10-14 | 14-18
Toluene | 42 | 58
2-Butanone | | 3J
30391 | 10-14 | 14-18
Toluene | 7 | 48
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location
Analyte
36491 | 6-10
Toluene | 20
Depth Interval in Feet
Concentration in micrograms per kilogram (ug/kg)
NS-Location Not Sampled
ND-Analytes Not Detected
N
0 100 200
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Volatile Organic Compounds Detected in OU1 Nonsource Areas, 10 to 18 Feet
Figure 4-69
OCTOBER 1992



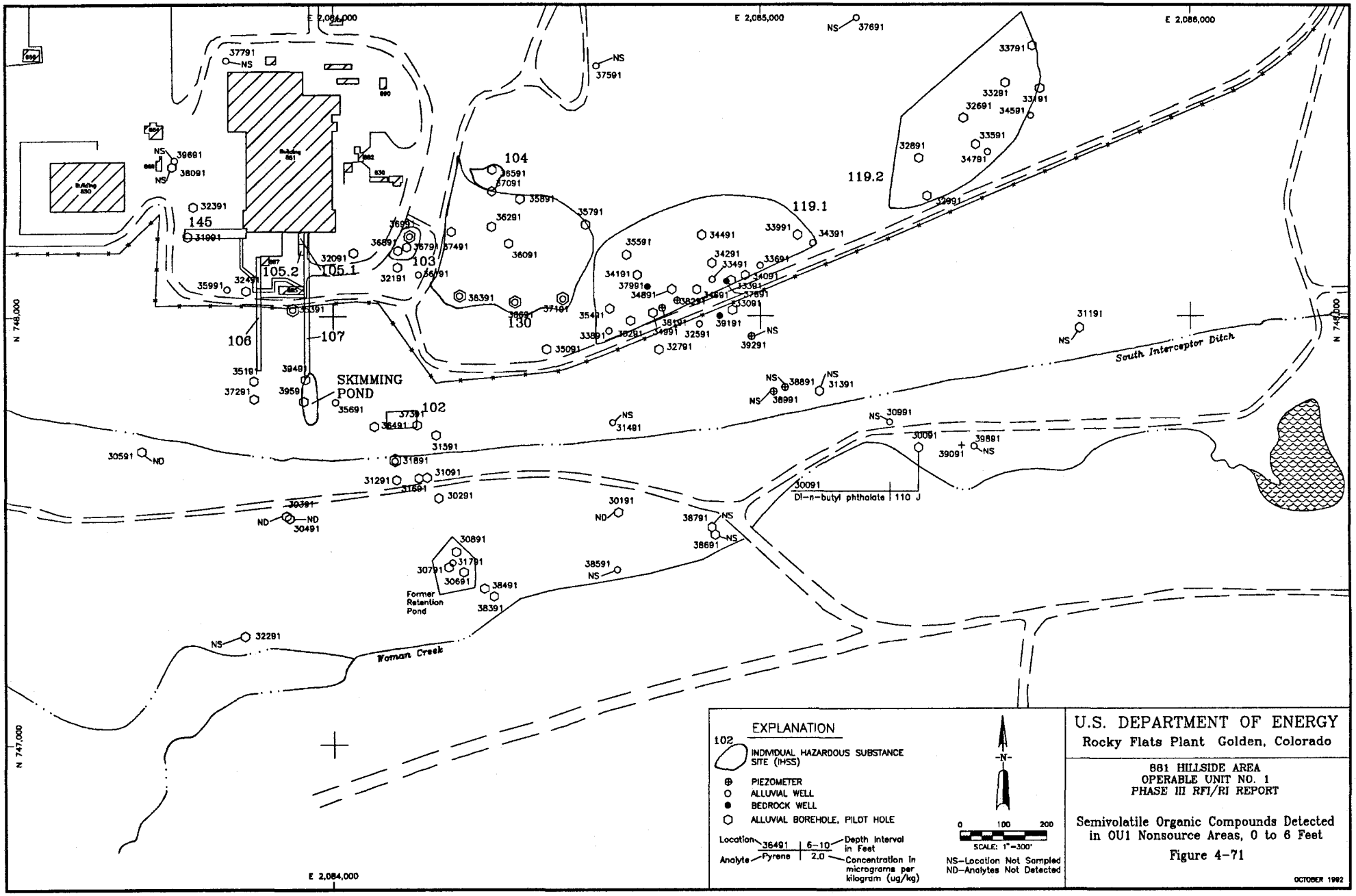
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Volatile Organic Compounds Detected in OU1 Nonsource Areas, Greater Than 18 Feet

Figure 4-70

OCTOBER 1992



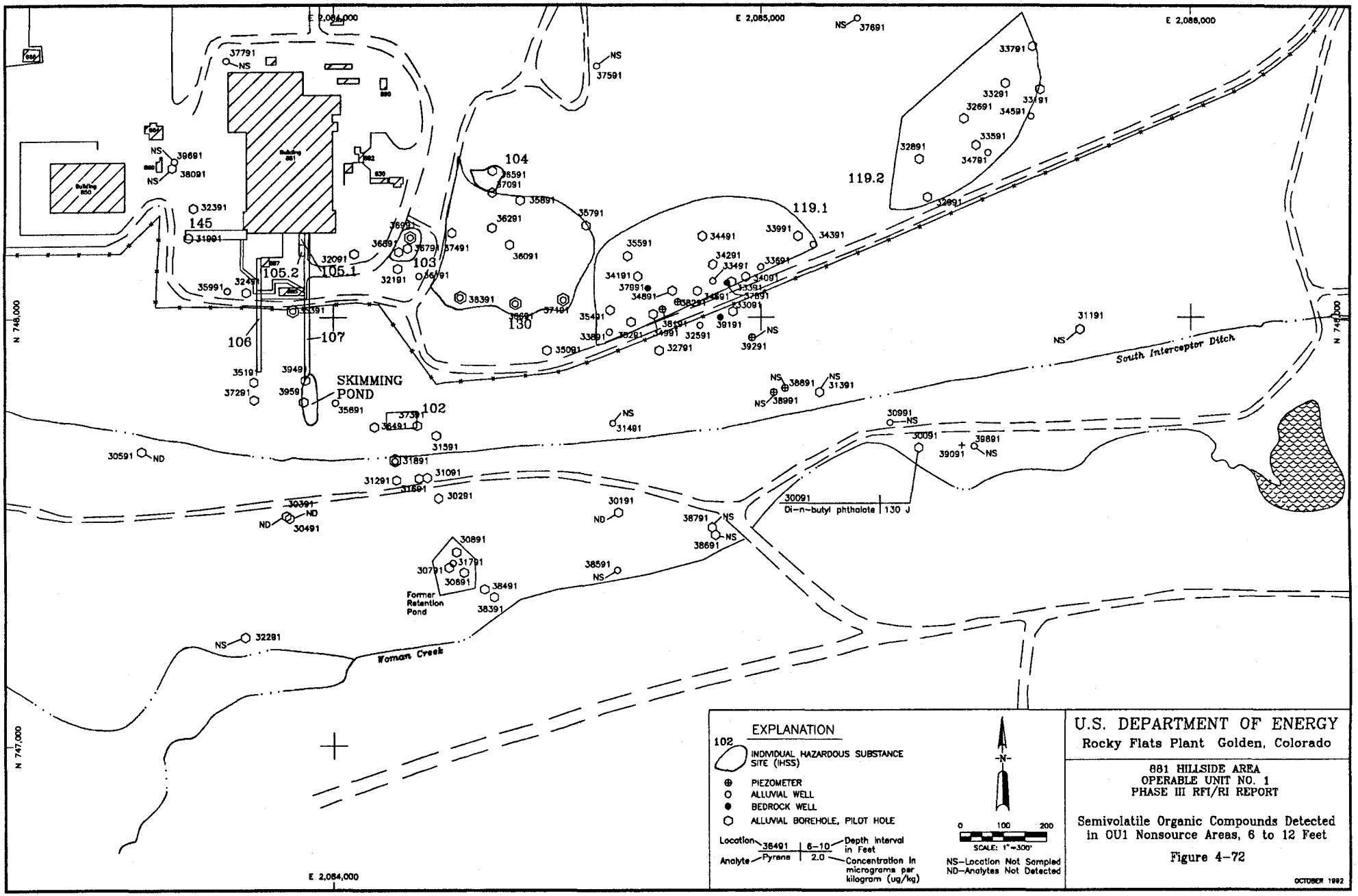
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

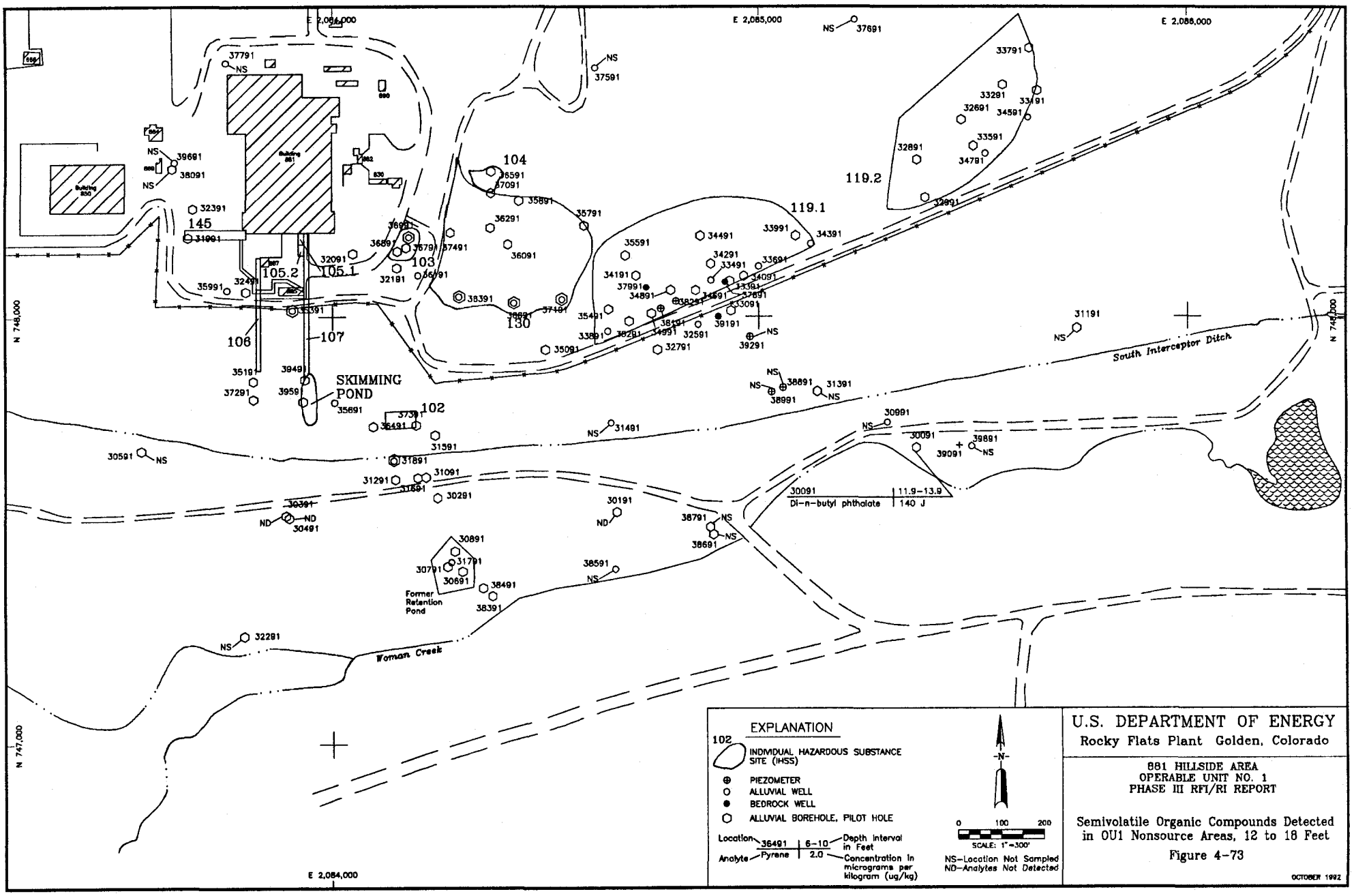
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

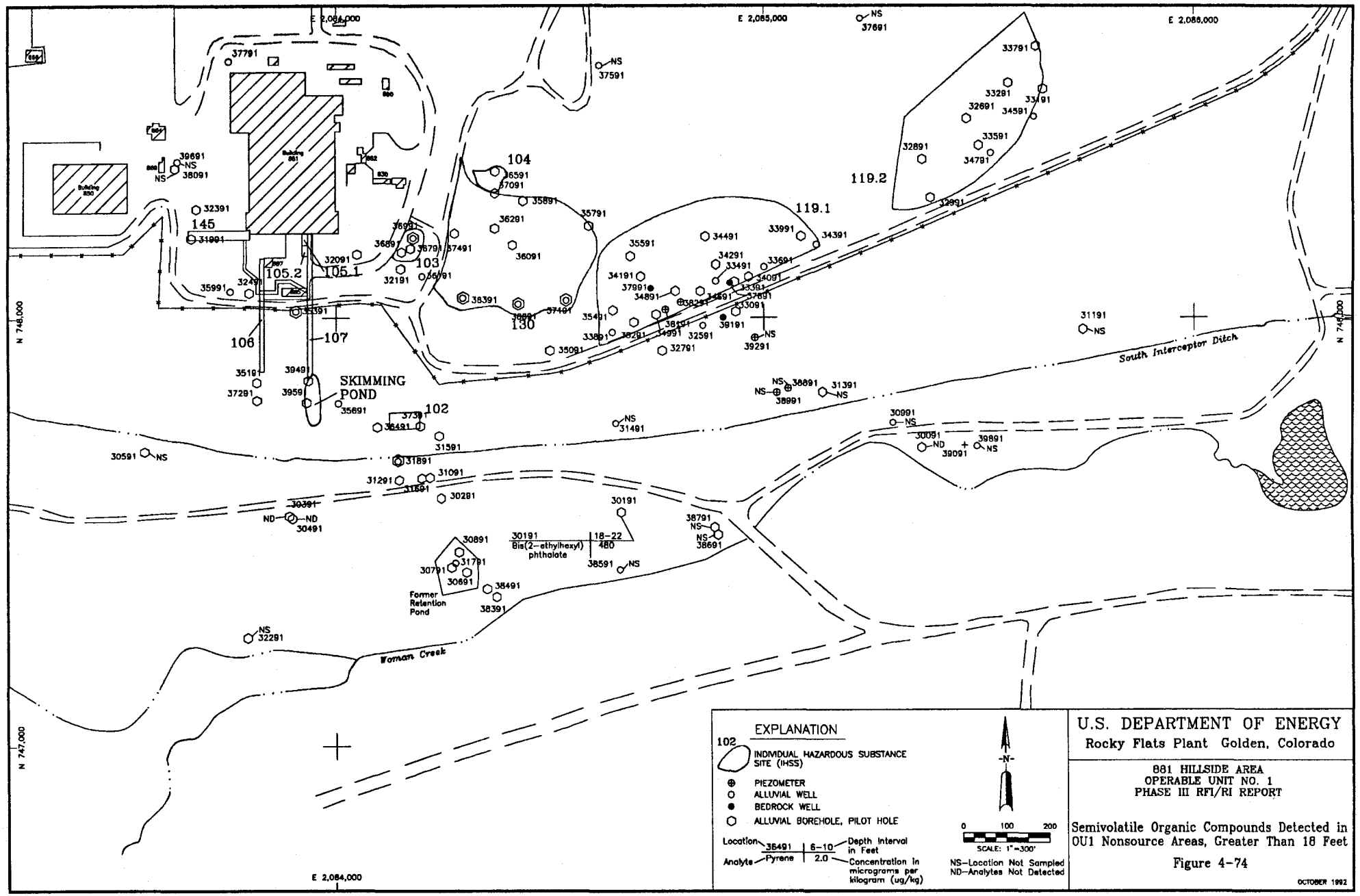
Semivolatile Organic Compounds Detected in OU1 Nonsource Areas, 0 to 6 Feet

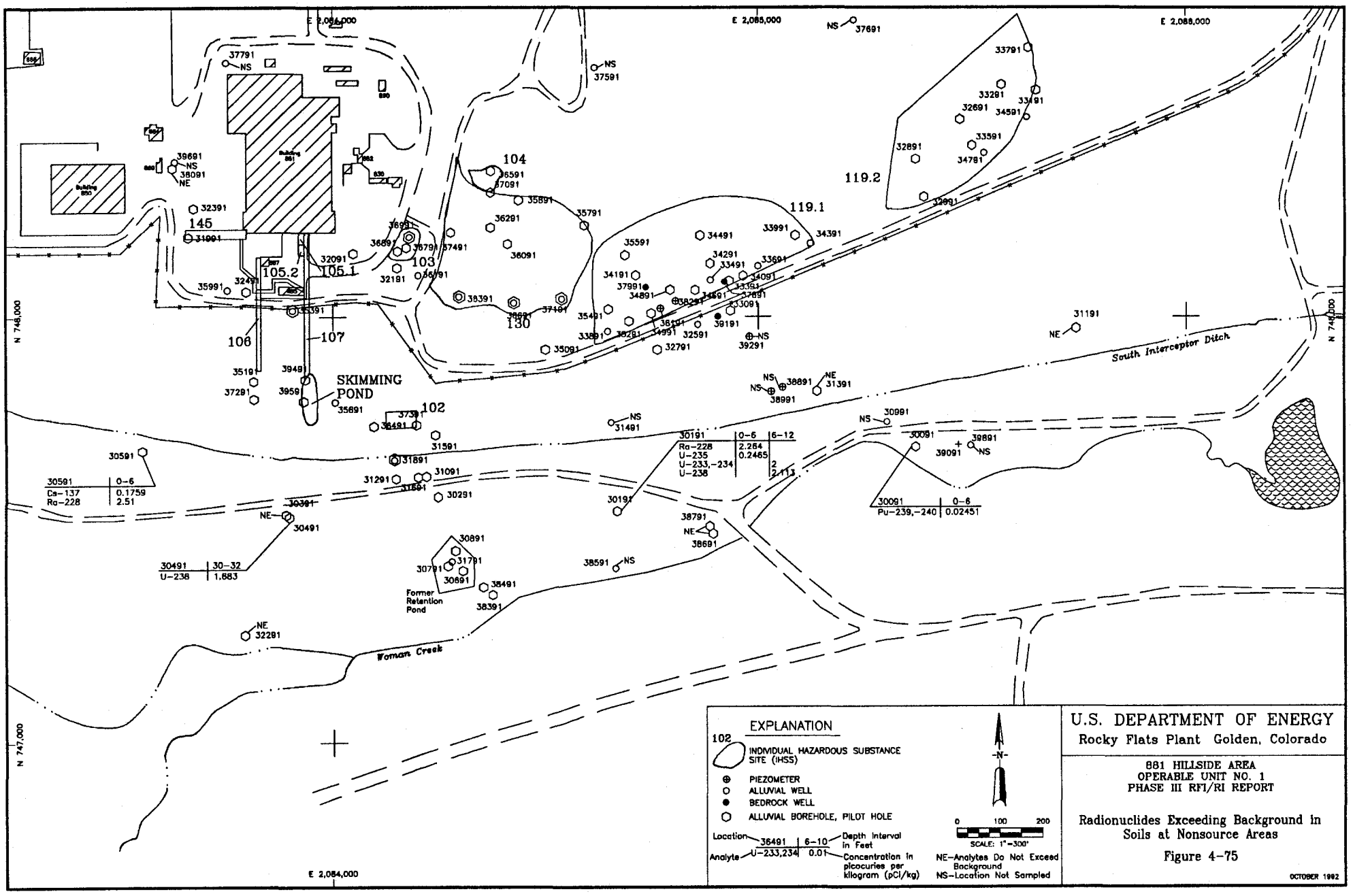
Figure 4-71

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 886
SKIMMING POND
Former Retention Pond
Woman Creek
South Interceptor Ditch
102
103
104
105.1
105.2
106
107
119.1
119.2
130
145
30091
Di-n-butyl phthalate | 130 J
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 36491 | 6-10 Depth interval in Feet
Analyte Pyrene | 2.0 Concentration in micrograms per kilogram (ug/kg)
-N-
0 100 200
SCALE: 1"=300'
NS-Location Not Sampled
ND-Analytes Not Detected
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Semivolatile Organic Compounds Detected in OU1 Nonsource Areas, 6 to 12 Feet
Figure 4-72
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
SKIMMING POND
Former Retention Pond
Woman Creek
South Interceptor Ditch
102
103
104
105.1
105.2
106
107
119.1
119.2
130
145
30091
Di-n-butyl phthalate
11.9-13.9
140 J
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 36491 6-10 Depth interval in Feet
Analyte Pyrene 2.0 Concentration in micrograms per kilogram (ug/kg)
N
0 100 200
SCALE: 1" =300'
NS-Location Not Sampled
ND-Analytes Not Detected
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Semivolatile Organic Compounds Detected in OU1 Nonsource Areas, 12 to 18 Feet
Figure 4-73
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
SKIMMING POND
Former Retention Pond
Woman Creek
South Interceptor Ditch
102
103
104
105.1
105.2
106
107
119.1
119.2
130
145
30191
Bis(2-ethylhexyl) phthalate
18-22
480
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location
Analyte
Pyrene
6-10
Depth Interval in Feet
2.0
Concentration in micrograms per kilogram (ug/kg)
N
0 100 200
SCALE: 1"=300'
NS-Location Not Sampled
ND-Analytes Not Detected
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Semivolatile Organic Compounds Detected in OU1 Nonsource Areas, Greater Than 18 Feet
Figure 4-74
OCTOBER 1992



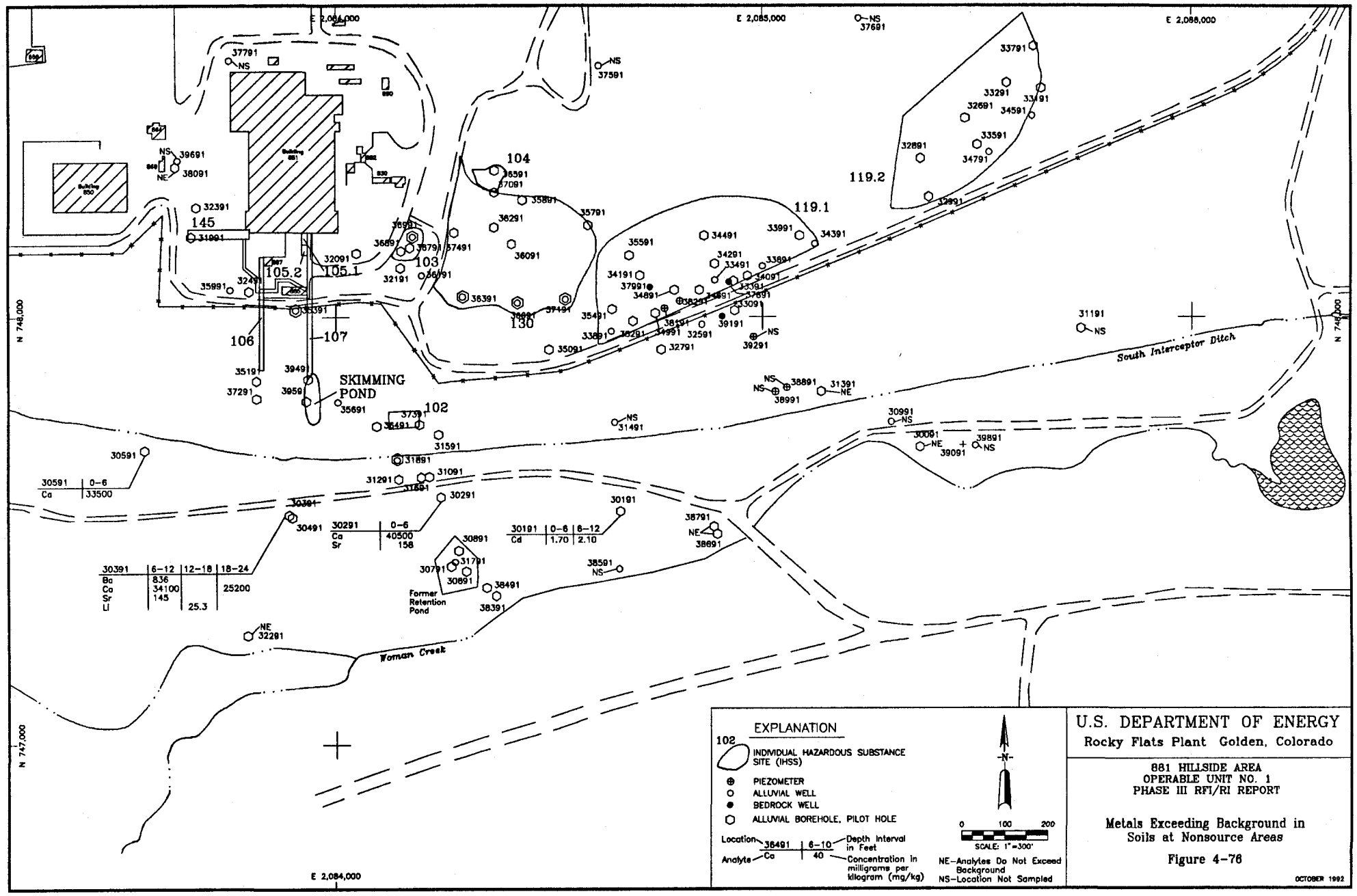
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

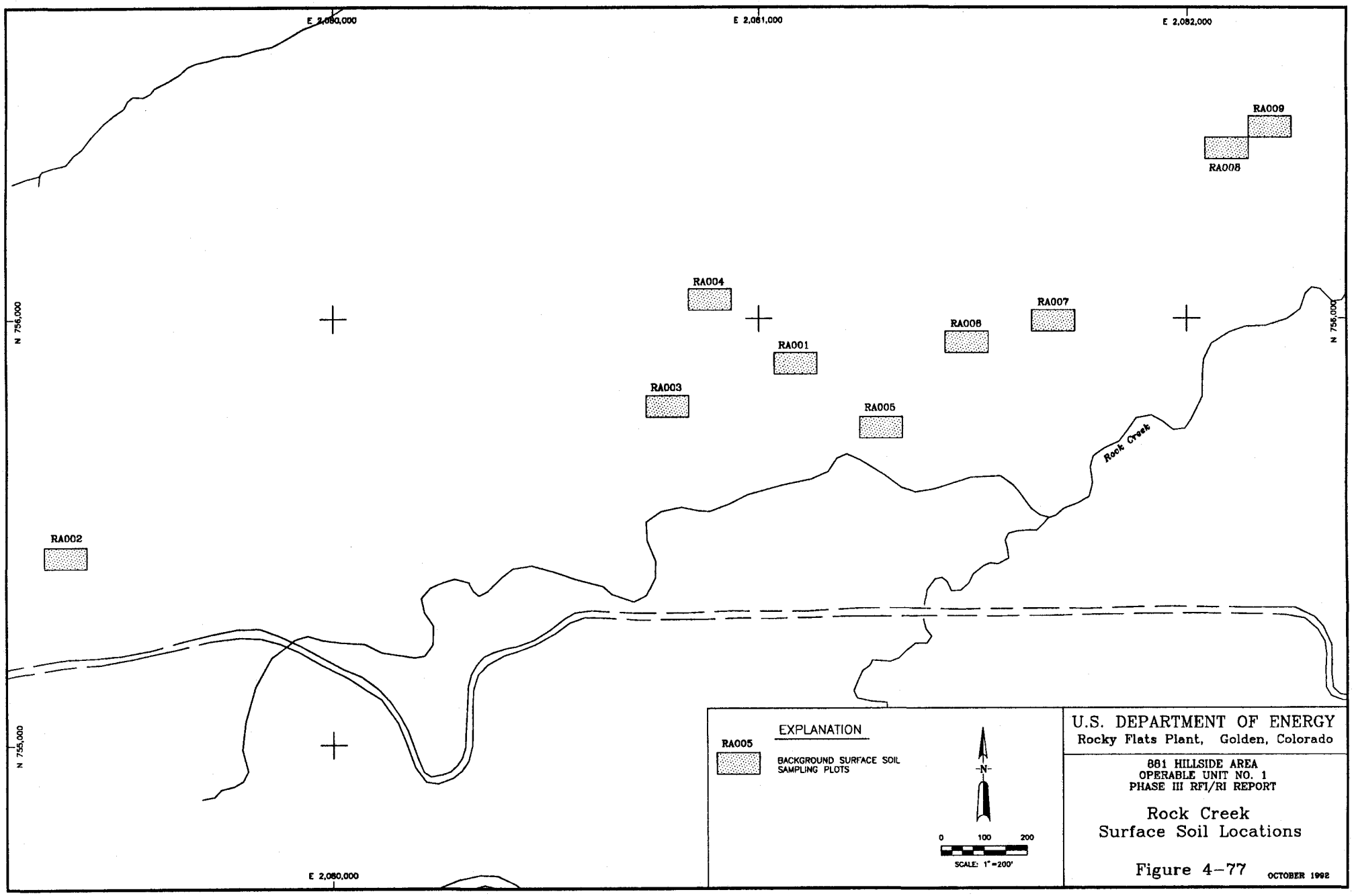
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

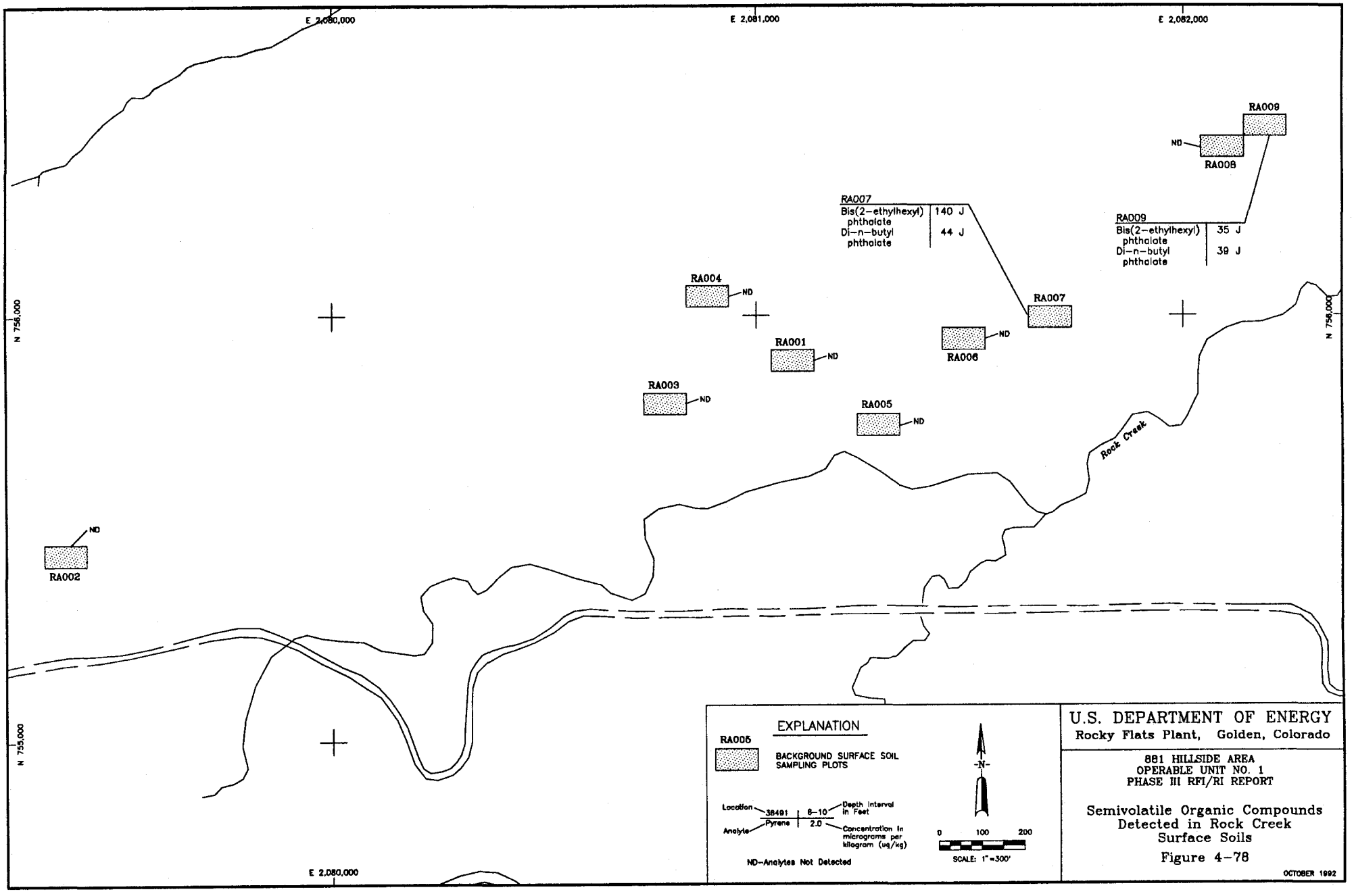
Radionuclides Exceeding Background in Soils at Nonsource Areas

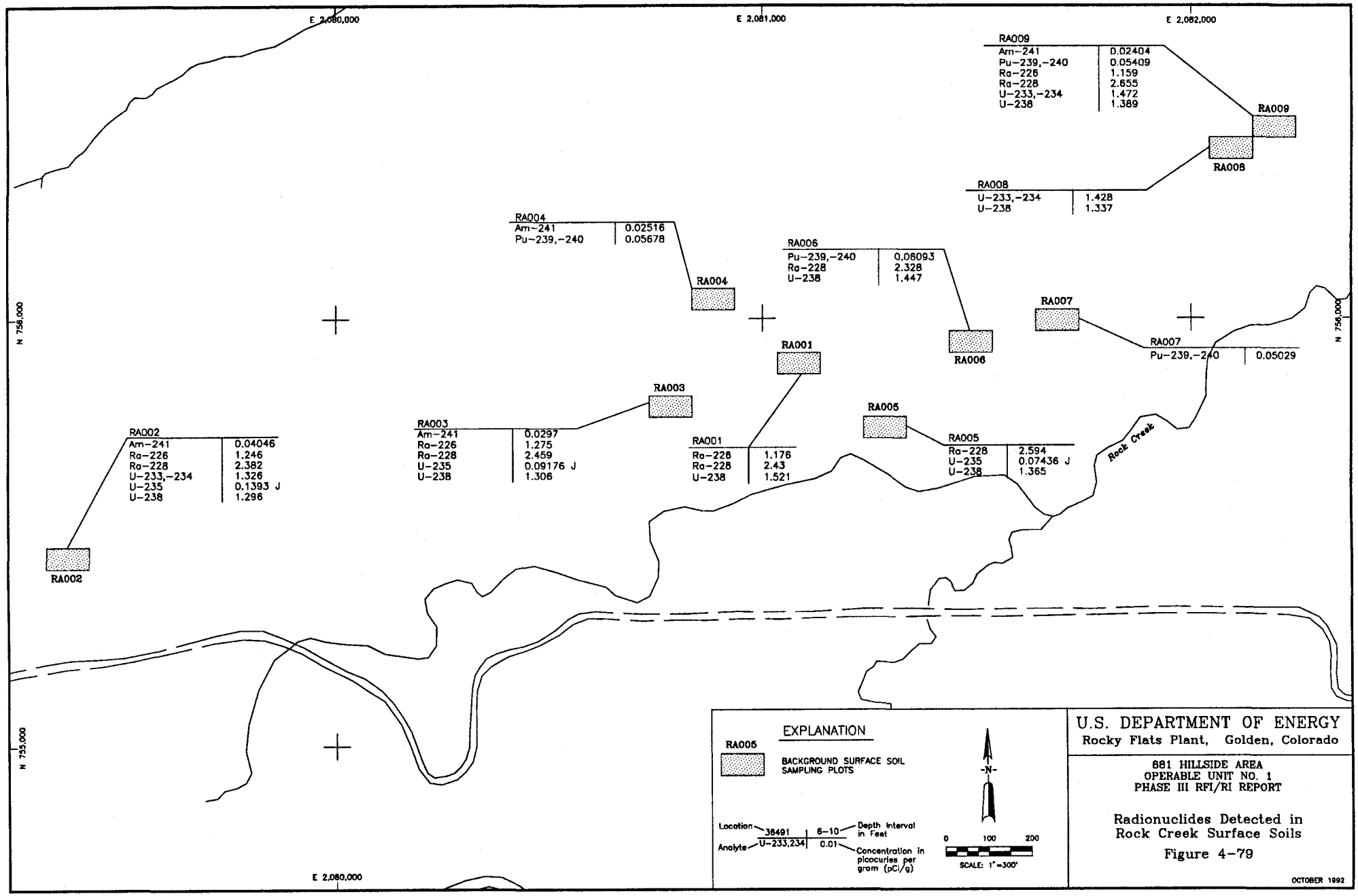
Figure 4-75

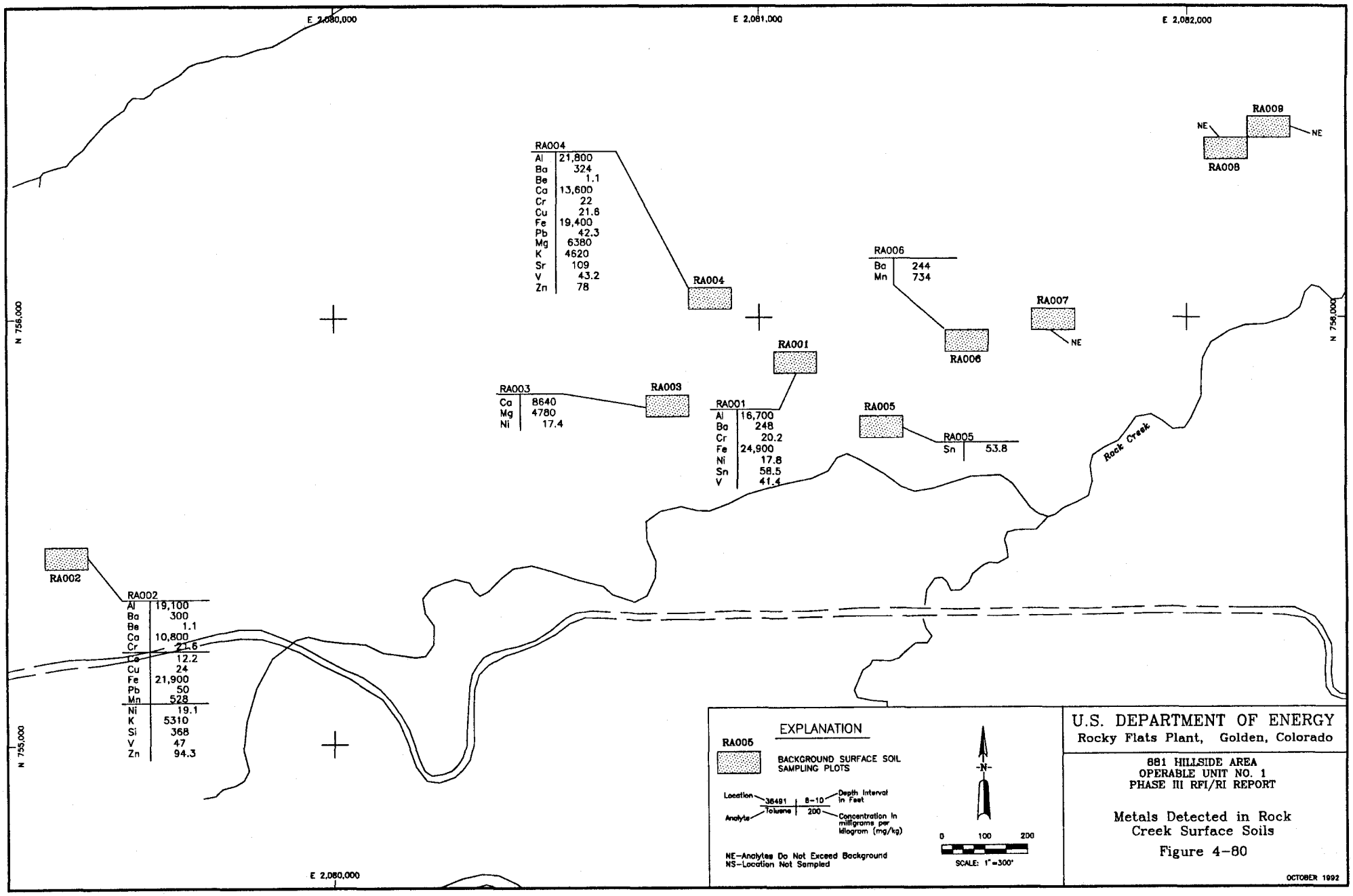
OCTOBER 1992

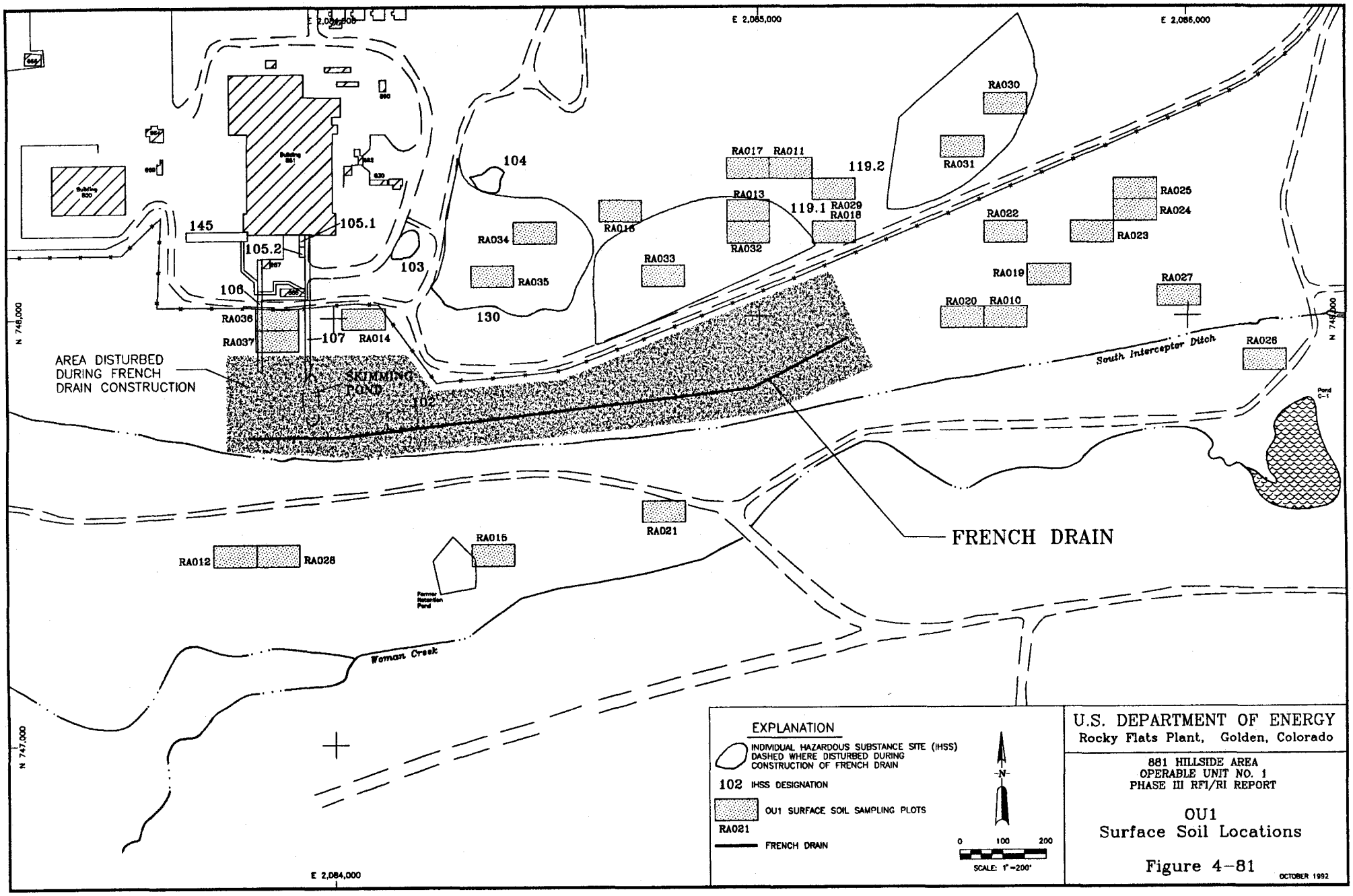

E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
SKIMMING POND
South Interceptor Ditch
Woman Creek
Former Retention Pond
145
106
107
105.1
105.2
103
104
102
130
119.1
119.2
30591 | 0-6
Ca | 33500
30291 | 0-6
Ca | 40500
Sr | 158
30191 | 0-6 | 6-12
Cd | 1.70 | 2.10
30391 | 6-12 | 12-18 | 18-24
Ba | 836
Ca | 34100 | 25200
Sr | 145
Li | 25.3
EXPLANATION
102 INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 38491 | 6-10 Depth Interval in Feet
Analyte Ca | 40 Concentration in milligrams per kilogram (mg/kg)
N
0 100 200
SCALE: 1"=300'
NE-Analytes Do Not Exceed Background
NS-Location Not Sampled
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Metals Exceeding Background in Soils at Nonsource Areas
Figure 4-76
OCTOBER 1992

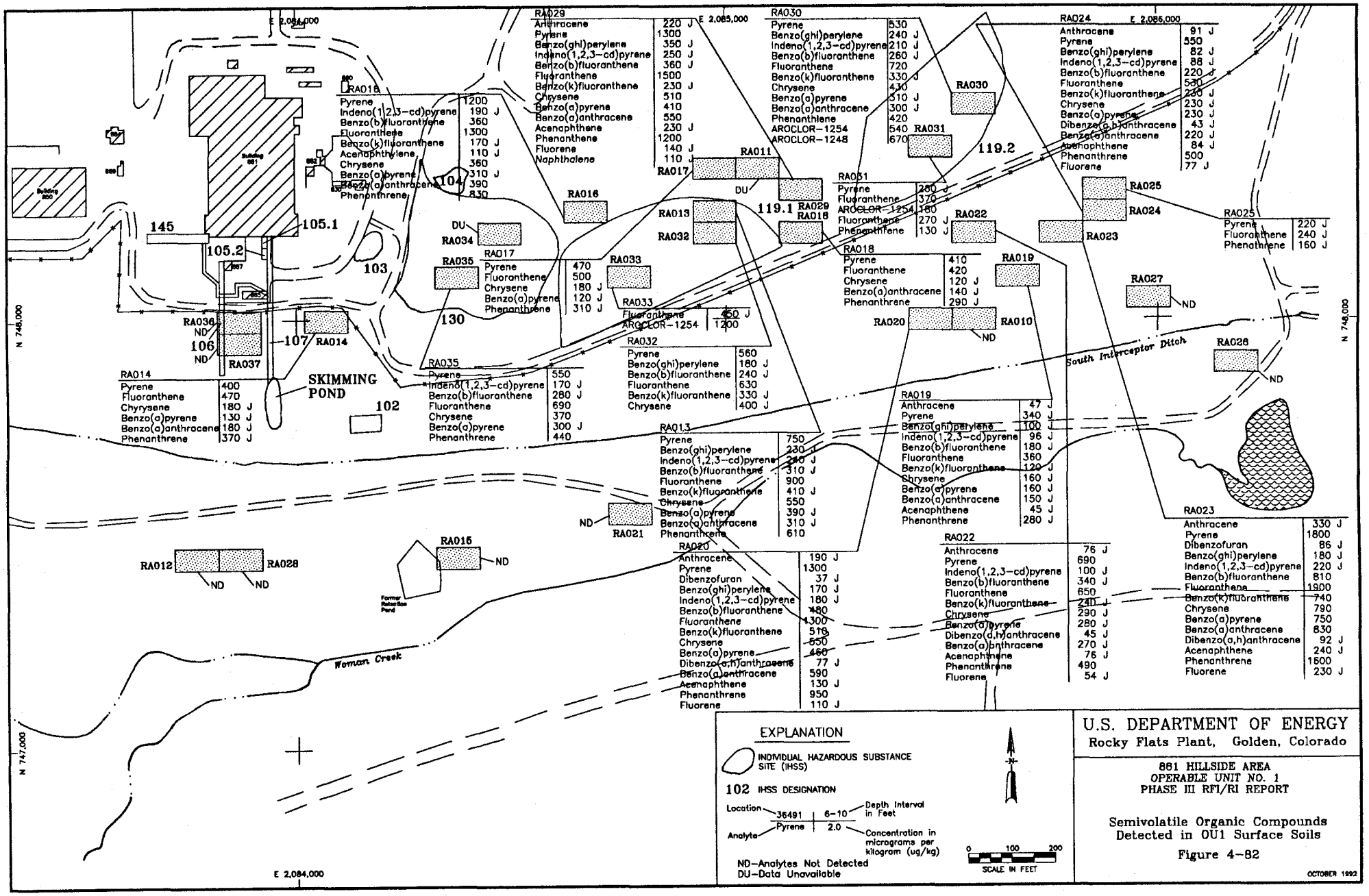

E 2,080,000
E 2,081,000
E 2,082,000
N 756,000
N 755,000
N 735,000
RA009
RA008
RA004
RA007
RA006
RA001
RA003
RA005
RA002
Rock Creek
EXPLANATION
RA005
BACKGROUND SURFACE SOIL SAMPLING PLOTS
N
0 100 200
SCALE: 1" = 200'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Rock Creek
Surface Soil Locations
Figure 4-77
OCTOBER 1992

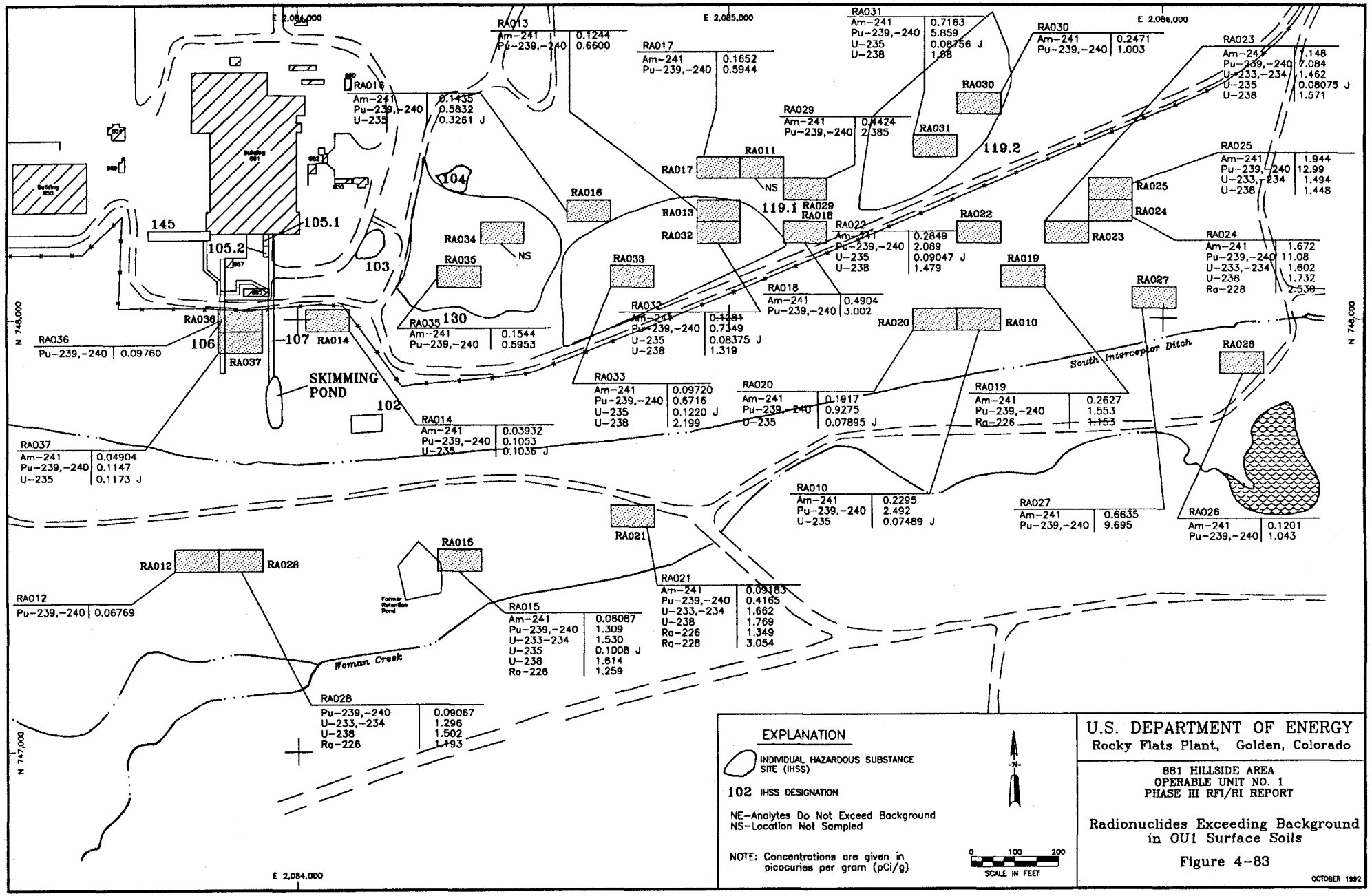

E 2,080,000
E 2,081,000
E 2,082,000
N 756,000
N 755,000
RA009
ND
RA008
RA007
Bis(2-ethylhexyl) phthalate 140 J
Di-n-butyl phthalate 44 J
RA009
Bis(2-ethylhexyl) phthalate 35 J
Di-n-butyl phthalate 39 J
RA004
ND
RA007
ND
RA006
RA001
ND
RA003
ND
RA005
ND
Rock Creek
ND
RA002
EXPLANATION
RA005
BACKGROUND SURFACE SOIL SAMPLING PLOTS
Location
36491
6-10
Depth interval in Feet
Analyte
Pyrene
2.0
Concentration in micrograms per kilogram (ug/kg)
ND-Analytes Not Detected
-N-
0
100
200
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Semivolatile Organic Compounds Detected in Rock Creek Surface Soils
Figure 4-78
OCTOBER 1992


E 2,080,000
E 2,081,000
E 2,082,000
N 756,000
N 755,000
RA009
Am-241 0.02404
Pu-239,-240 0.05409
Ra-226 1.159
Ra-228 2.655
U-233,-234 1.472
U-238 1.389
RA009
RA008
RA008
U-233,-234 1.428
U-238 1.337
RA004
Am-241 0.02516
Pu-239,-240 0.05678
RA004
RA006
Pu-239,-240 0.08093
Ra-228 2.328
U-238 1.447
RA006
RA007
RA007
Pu-239,-240 0.05029
RA001
RA001
Ra-228 1.176
Ra-228 2.43
U-238 1.521
RA003
RA003
Am-241 0.0297
Ra-226 1.275
Ra-228 2.459
U-235 0.09176 J
U-238 1.306
RA005
RA005
Ra-228 2.594
U-235 0.07436 J
U-238 1.365
Rock Creek
RA002
Am-241 0.04046
Ra-226 1.246
Ra-228 2.382
U-233,-234 1.326
U-235 0.1393 J
U-238 1.296
RA002
EXPLANATION
RA005
BACKGROUND SURFACE SOIL SAMPLING PLOTS
Location 38491 6-10 Depth interval in Feet
Analyte U-233,234 0.01 Concentration in picocuries per gram (pCi/g)
-N-
0 100 200
SCALE: 1" =300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Radionuclides Detected in Rock Creek Surface Soils
Figure 4-79
OCTOBER 1992


E 2,080,000
E 2,081,000
E 2,082,000
N 756,000
N 755,000
RA009
NE
NE
RA008
RA004
Al 21,800
Ba 324
Be 1.1
Ca 13,600
Cr 22
Cu 21.6
Fe 19,400
Pb 42.3
Mg 6380
K 4620
Sr 109
V 43.2
Zn 78
RA004
RA006
Ba 244
Mn 734
RA006
RA007
NE
RA001
RA003
Ca 8640
Mg 4780
Ni 17.4
RA003
RA001
Al 16,700
Ba 248
Cr 20.2
Fe 24,900
Ni 17.8
Sn 58.5
V 41.4
RA005
RA005
Sn 53.8
Rock Creek
RA002
RA002
Al 19,100
Ba 300
Be 1.1
Ca 10,800
Cr 21.6
Co 12.2
Cu 24
Fe 21,900
Pb 50
Mn 528
Ni 19.1
K 5310
Si 368
V 47
Zn 94.3
EXPLANATION
RA005
BACKGROUND SURFACE SOIL SAMPLING PLOTS
Location
36491
8-10
Depth Interval in Feet
Analyte
Toluene
200
Concentration in milligrams per kilogram (mg/kg)
NE-Analytes Do Not Exceed Background
NS-Location Not Sampled
-N-
0 100 200
SCALE: 1" = 300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Metals Detected in Rock Creek Surface Soils
Figure 4-80
OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
145
105.1
105.2
106
103
104
130
107
102
119.1
119.2
RA036
RA037
RA014
RA034
RA035
RA016
RA033
RA017
RA011
RA013
RA032
RA029
RA018
RA030
RA031
RA022
RA025
RA024
RA023
RA019
RA020
RA010
RA027
RA026
RA021
RA015
RA012
RA028
AREA DISTURBED
DURING FRENCH
DRAIN CONSTRUCTION
SKIMMING
POND
South Interceptor Ditch
Woman Creek
FRENCH DRAIN
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
DASHED WHERE DISTURBED DURING
CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
OU1 SURFACE SOIL SAMPLING PLOTS
RA021
FRENCH DRAIN
N
0 100 200
SCALE: 1"=200'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
OU1
Surface Soil Locations
Figure 4-81
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 880
145
105.1
105.2
103
104
130
107
106
102
SKIMMING POND
South Interceptor Ditch
Woman Creek
Former Retention Pond
RA018
Pyrene 1200
Indeno(1,2,3-cd)pyrene 190 J
Benzo(b)fluoranthene 360
Fluoranthene 1300
Benzo(k)fluoranthene 170 J
Acenaphthylene 110 J
Chrysene 360
Benzo(a)pyrene 310 J
Benzo(a)anthracene 390
Phenanthrene 830
RA029
Anthracene 220 J
Pyrene 1300
Benzo(ghi)perylene 350 J
Indeno(1,2,3-cd)pyrene 250 J
Benzo(b)fluoranthene 360 J
Fluoranthene 1500
Benzo(k)fluoranthene 230 J
Chrysene 510
Benzo(a)pyrene 410
Benzo(a)anthracene 550
Acenaphthene 230 J
Phenanthrene 1200
Fluorene 140 J
Naphthalene 110 J
RA030
Pyrene 530
Benzo(ghi)perylene 240 J
Indeno(1,2,3-cd)pyrene 210 J
Benzo(b)fluoranthene 260 J
Fluoranthene 720
Benzo(k)fluoranthene 330 J
Chrysene 430
Benzo(a)pyrene 310 J
Benzo(a)anthracene 300 J
Phenanthlene 420
AROCLOR-1254 540
AROCLOR-1248 670
RA024
Anthracene 91 J
Pyrene 550
Benzo(ghi)perylene 82 J
Indeno(1,2,3-cd)pyrene 88 J
Benzo(b)fluoranthene 220 J
Fluoranthene 530
Benzo(k)fluoranthene 230 J
Chrysene 230 J
Benzo(a)pyrene 230 J
Dibenzo(a,h)anthracene 43 J
Benzo(a)anthracene 220 J
Acenaphthene 84 J
Phenanthrene 500
Fluorene 77 J
RA025
Pyrene 220 J
Fluoranthene 240 J
Phenanthrene 160 J
RA031
Pyrene 260 J
Fluoranthene 370
AROCLOR-1254 180
Fluoranthene 270 J
Phenanthrene 130 J
RA017
Pyrene 470
Fluoranthene 500
Chrysene 180 J
Benzo(a)pyrene 120 J
Phenanthrene 310 J
RA033
Fluoranthene 450 J
AROCLOR-1254 1200
RA032
Pyrene 560
Benzo(ghi)perylene 180 J
Benzo(b)fluoranthene 240 J
Fluoranthene 630
Benzo(k)fluoranthene 330 J
Chrysene 400 J
RA018
Pyrene 410
Fluoranthene 420
Chrysene 120 J
Benzo(a)anthracene 140 J
Phenanthrene 290 J
RA014
Pyrene 400
Fluoranthene 470
Chyrysene 180 J
Benzo(a)pyrene 130 J
Benzo(a)anthracene 180 J
Phenanthrene 370 J
RA035
Pyrene 550
Indeno(1,2,3-cd)pyrene 170 J
Benzo(b)fluoranthene 280 J
Fluoranthene 690
Chrysene 370
Benzo(a)pyrene 300 J
Phenanthrene 440
RA013
Pyrene 750
Benzo(ghi)perylene 230 J
Indeno(1,2,3-cd)pyrene 240 J
Benzo(b)fluoranthene 310 J
Fluoranthene 900
Benzo(k)fluoranthene 410 J
Chrysene 550
Benzo(a)pyrene 390 J
Benzo(a)anthracene 310 J
Phenanthrene 610
RA019
Anthracene 47 J
Pyrene 340 J
Benzo(ghi)perylene 100 J
Indeno(1,2,3-cd)pyrene 96 J
Benzo(b)fluoranthene 180 J
Fluoranthene 360
Benzo(k)fluoranthene 120 J
Chrysene 160 J
Benzo(a)pyrene 160 J
Benzo(a)anthracene 150 J
Acenaphthene 45 J
Phenanthrene 280 J
RA020
Anthracene 190 J
Pyrene 1300
Dibenzofuran 37 J
Benzo(ghi)perylene 170 J
Indeno(1,2,3-cd)pyrene 180 J
Benzo(b)fluoranthene 480
Fluoranthene 1300
Benzo(k)fluoranthene 510
Chrysene 550
Benzo(a)pyrene 480
Dibenzo(a,h)anthracene 77 J
Benzo(a)anthracene 590
Acenaphthene 130 J
Phenanthrene 950
Fluorene 110 J
RA022
Anthracene 76 J
Pyrene 690
Indeno(1,2,3-cd)pyrene 100 J
Benzo(b)fluoranthene 340 J
Fluoranthene 650
Benzo(k)fluoranthene 240 J
Chrysene 290 J
Benzo(a)pyrene 280 J
Dibenzo(a,h)anthracene 45 J
Benzo(a)anthracene 270 J
Acenaphthene 76 J
Phenanthrene 490
Fluorene 54 J
RA023
Anthracene 330 J
Pyrene 1800
Dibenzofuran 86 J
Benzo(ghi)perylene 180 J
Indeno(1,2,3-cd)pyrene 220 J
Benzo(b)fluoranthene 810
Fluoranthene 1900
Benzo(k)fluoranthene 740
Chrysene 790
Benzo(a)pyrene 750
Benzo(a)anthracene 830
Dibenzo(a,h)anthracene 92 J
Acenaphthene 240 J
Phenanthrene 1600
Fluorene 230 J
RA036 ND
RA037 ND
RA034 DU
RA035
RA016
RA017
RA011
RA013
RA032
RA029
RA018
RA030
RA031
RA022
RA019
RA020
RA010 ND
RA014
RA024
RA025
RA023
RA027 ND
RA026 ND
RA021 ND
RA012 ND
RA028 ND
RA015 ND
119.1
119.2
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
102 IHSS DESIGNATION
Location 36491 6-10 Depth Interval in Feet
Analyte Pyrene 2.0 Concentration in micrograms per kilogram (ug/kg)
ND-Analytes Not Detected
DU-Data Unavailable
N
0 100 200
SCALE IN FEET
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Semivolatile Organic Compounds Detected in OU1 Surface Soils
Figure 4-82
OCTOBER 1992



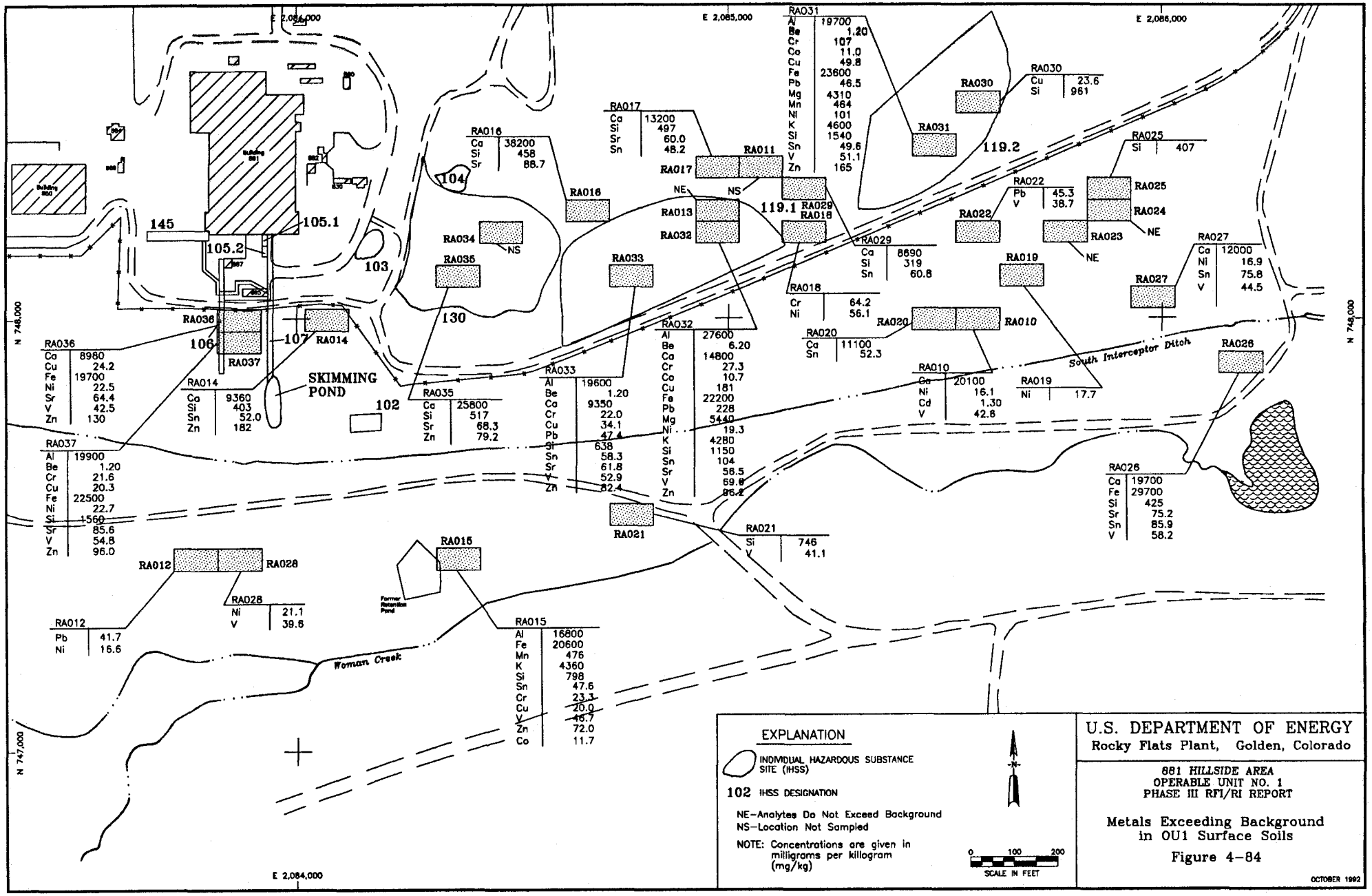
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Radionuclides Exceeding Background in OU1 Surface Soils

Figure 4-83

OCTOBER 1992



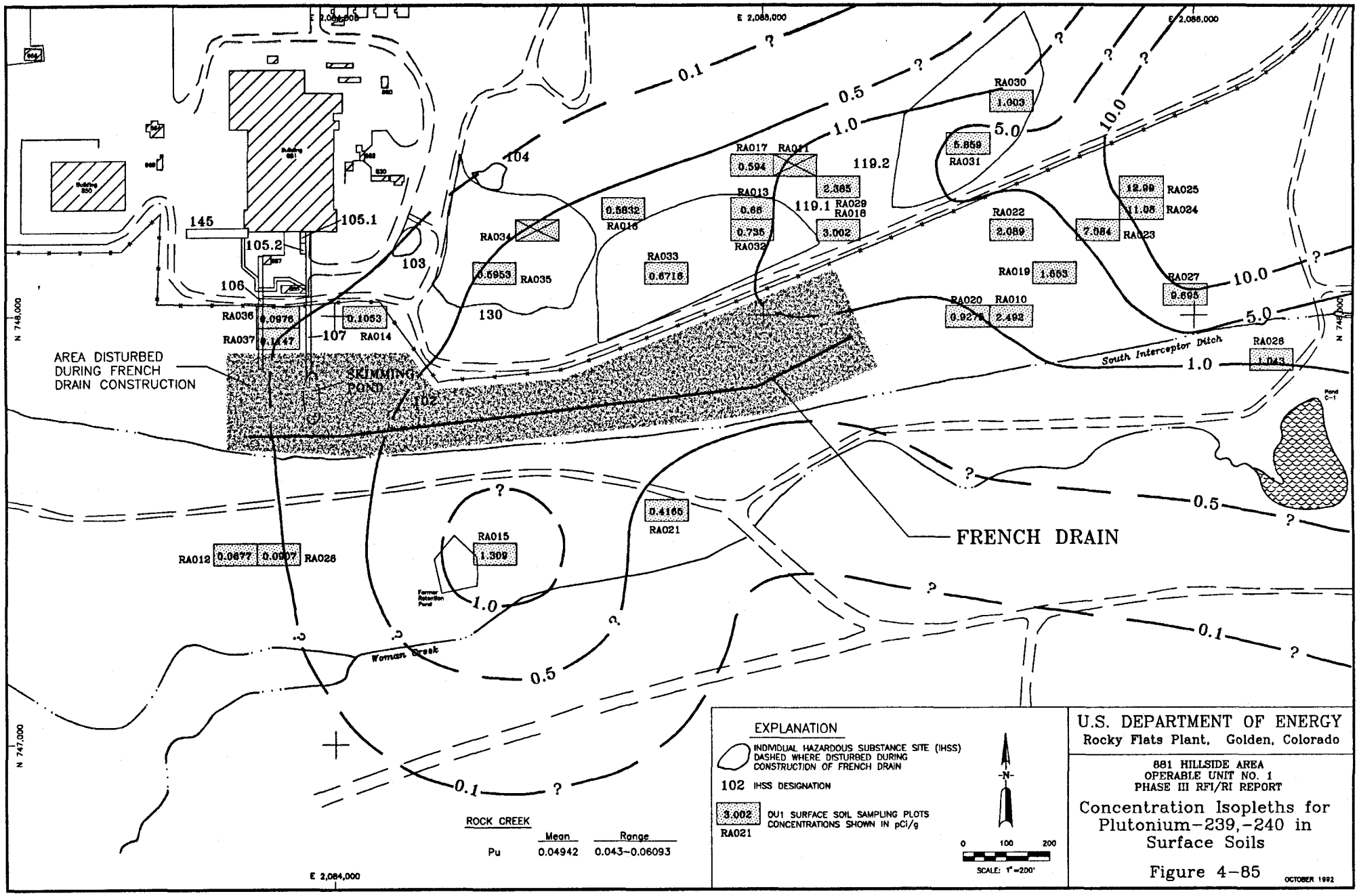
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

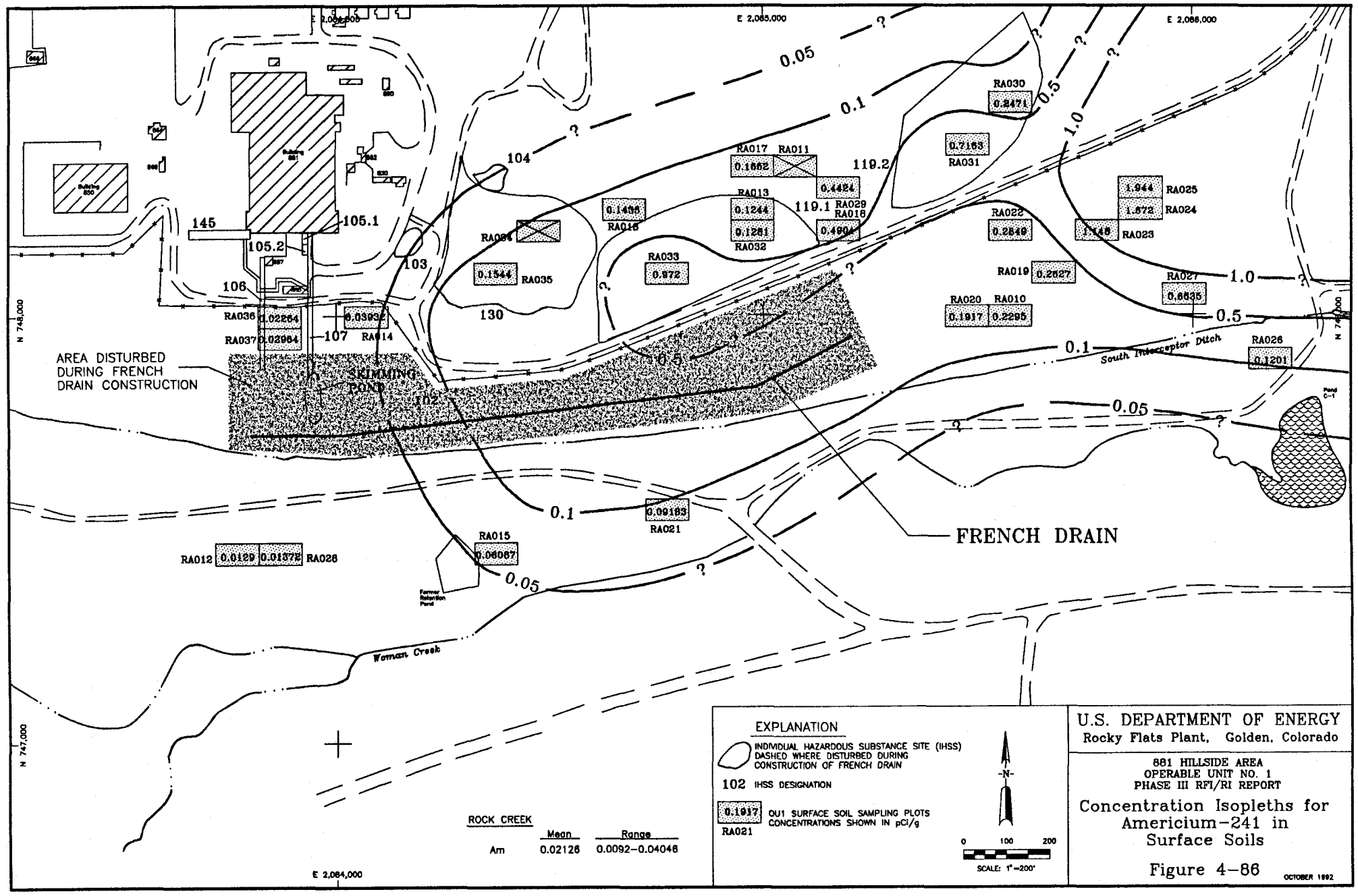
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in OU1 Surface Soils

Figure 4–84

OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
0.1
0.5
1.0
5.0
10.0
?
RA030
1.003
5.859
RA031
RA017
RA011
0.594
2.365
119.2
RA013
0.66
0.735
RA032
119.1
RA029
RA018
3.002
0.5832
RA016
RA034
0.5953
RA035
RA033
0.6716
RA022
2.089
7.084
RA023
12.99
RA025
11.08
RA024
RA019
1.663
RA027
9.665
RA020
0.9276
RA010
2.492
RA026
1.043
South Interceptor Ditch
Pond C-1
104
145
105.1
105.2
103
106
107
130
102
RA036
0.0976
RA037
0.1147
0.1053
RA014
AREA DISTURBED
DURING FRENCH
DRAIN CONSTRUCTION
SKIMMING
POND
FRENCH DRAIN
RA015
1.309
Former
Retention
Pond
0.4165
RA021
RA012
0.0877
0.0007
RA028
Woman Creek
ROCK CREEK
Mean
Range
Pu
0.04942
0.043–0.06093
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
DASHED WHERE DISTURBED DURING
CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
3.002
RA021
OU1 SURFACE SOIL SAMPLING PLOTS
CONCENTRATIONS SHOWN IN pCi/g
-N-
0
100
200
SCALE: 1"=200'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Concentration Isopleths for
Plutonium-239,-240 in
Surface Soils
Figure 4-85
OCTOBER 1992



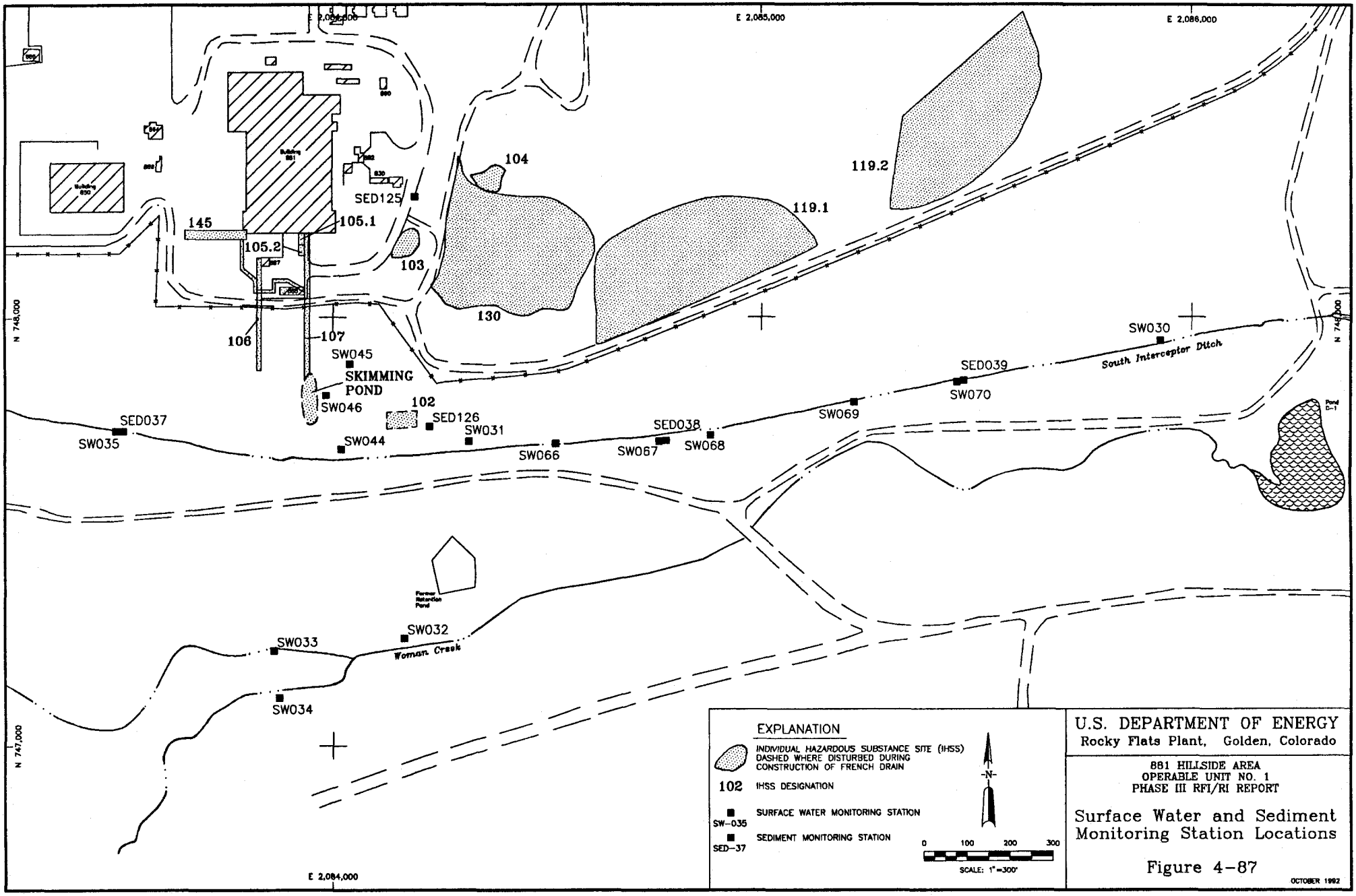
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

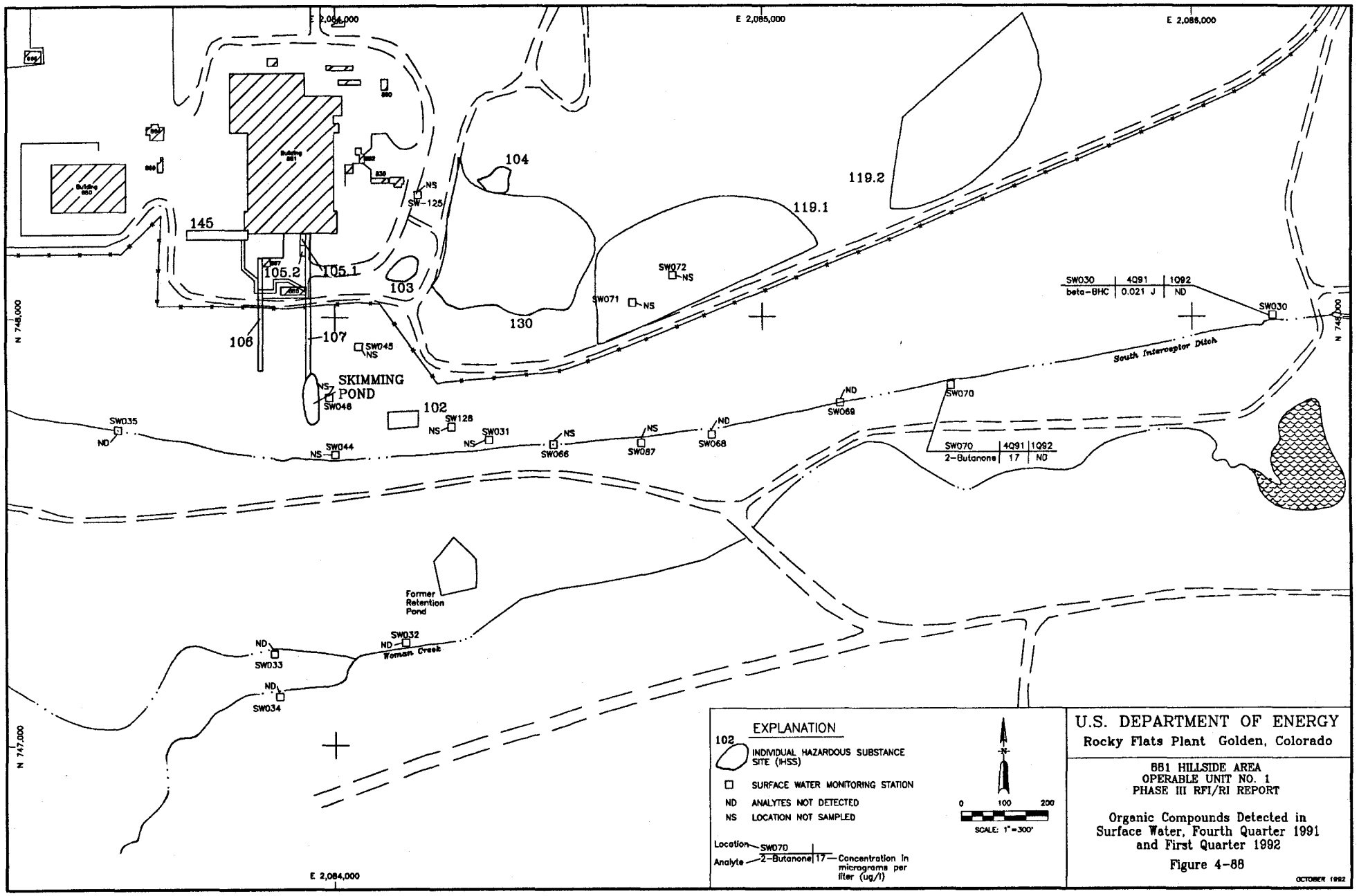
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

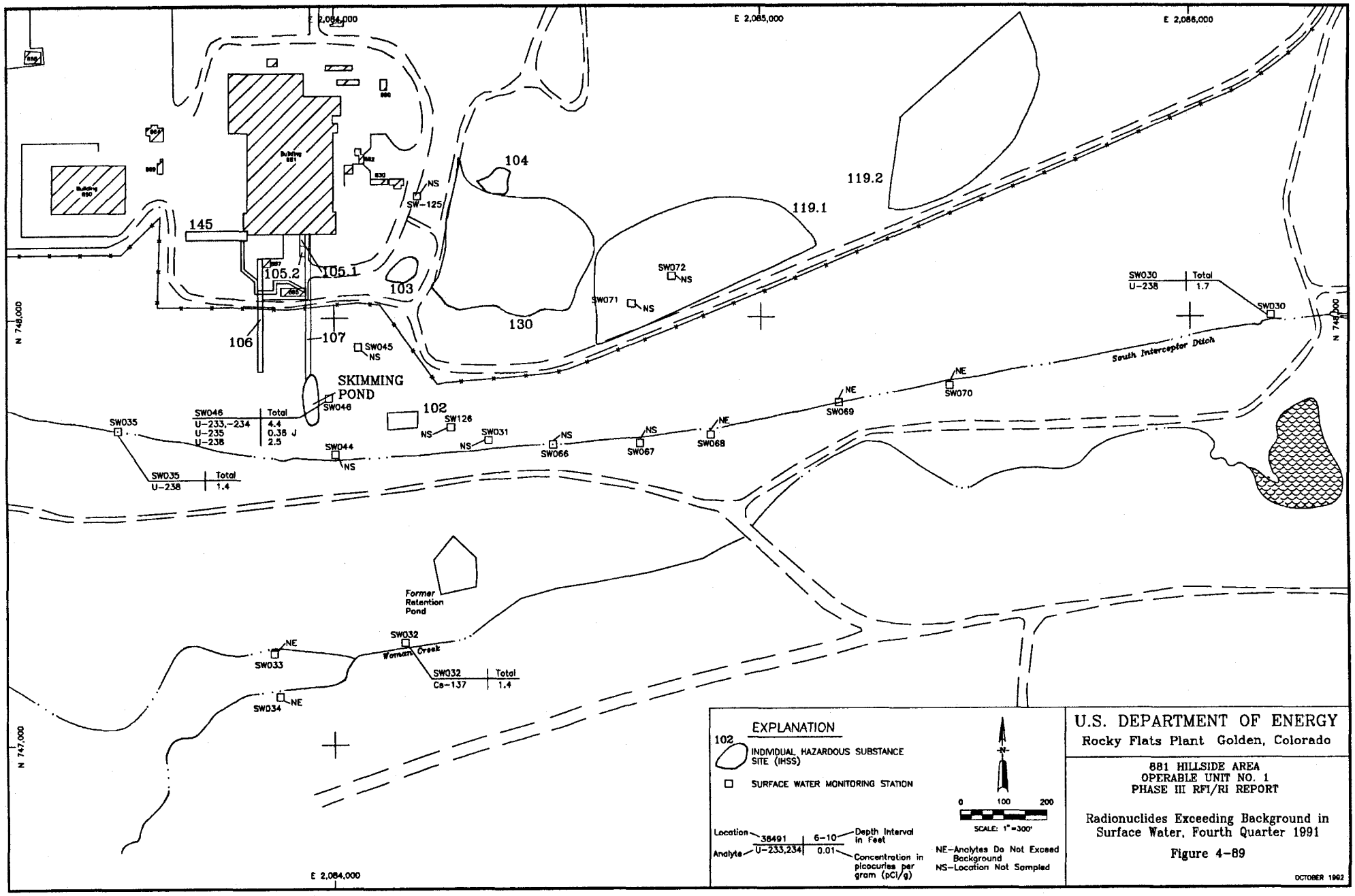
Concentration Isopleths for Americium-241 in Surface Soils

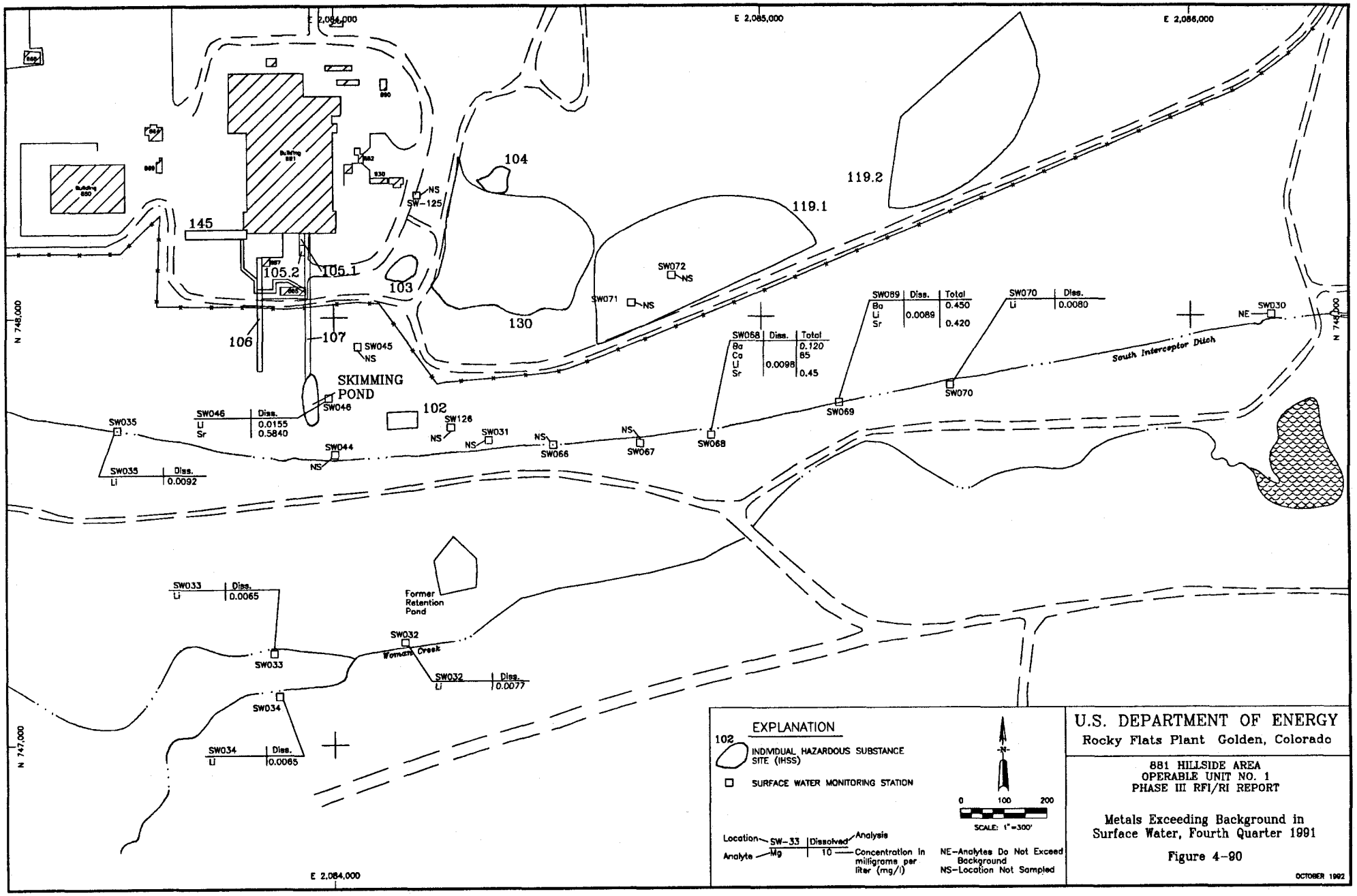
Figure 4-86

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 650
SED125
104
119.2
119.1
145
105.1
105.2
103
130
106
107
SW045
SKIMMING POND
SW046
102
SED126
SW031
SW044
SED037
SW035
SW066
SED038
SW067
SW068
SW069
SED039
SW070
SW030
South Interceptor Ditch
Pond D-1
Former Retention Pond
SW032
SW033
Woman Creek
SW034
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
102 IHSS DESIGNATION
SW-035 SURFACE WATER MONITORING STATION
SED-37 SEDIMENT MONITORING STATION
N
0 100 200 300
SCALE: 1" =300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Surface Water and Sediment Monitoring Station Locations
Figure 4-87
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
145
105.2
105.1
103
104
119.2
119.1
130
106
107
102
SW-125
NS
SW045
SW046
SKIMMING POND
SW072
SW071
SW030
SW035
SW044
SW128
SW031
SW066
SW067
SW068
SW069
SW070
South Interceptor Ditch
Former Retention Pond
SW032
SW033
SW034
Woman Creek
ND
SW030 | 4Q91 | 1Q92
beta-BHC | 0.021 J | ND
SW070 | 4Q91 | 1Q92
2-Butanone | 17 | ND
EXPLANATION
102 INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
SURFACE WATER MONITORING STATION
ND ANALYTES NOT DETECTED
NS LOCATION NOT SAMPLED
Location SW070
Analyte 2-Butanone 17 Concentration in micrograms per liter (ug/l)
0 100 200
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Organic Compounds Detected in Surface Water, Fourth Quarter 1991 and First Quarter 1992
Figure 4-88
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 880
145
105.2
105.1
103
104
119.2
119.1
130
106
107
102
SW-125
NS
SW072
SW071
SW045
SKIMMING POND
SW046
SW126
SW031
SW044
SW066
SW067
SW068
SW069
SW070
SW030
SW035
SW033
SW034
SW032
NE
South Interceptor Ditch
Former Retention Pond
Woman Creek
SW046 | Total
U-233,-234 | 4.4
U-235 | 0.38 J
U-238 | 2.5
SW035 | Total
U-238 | 1.4
SW030 | Total
U-238 | 1.7
SW032 | Total
Cs-137 | 1.4
EXPLANATION
102
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
SURFACE WATER MONITORING STATION
Location
38491
6-10
Depth Interval in Feet
Analyte
U-233,234
0.01
Concentration in picocuries per gram (pCi/g)
NE-Analytes Do Not Exceed Background
NS-Location Not Sampled
N
0 100 200
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Radionuclides Exceeding Background in Surface Water, Fourth Quarter 1991
Figure 4-89
OCTOBER 1992



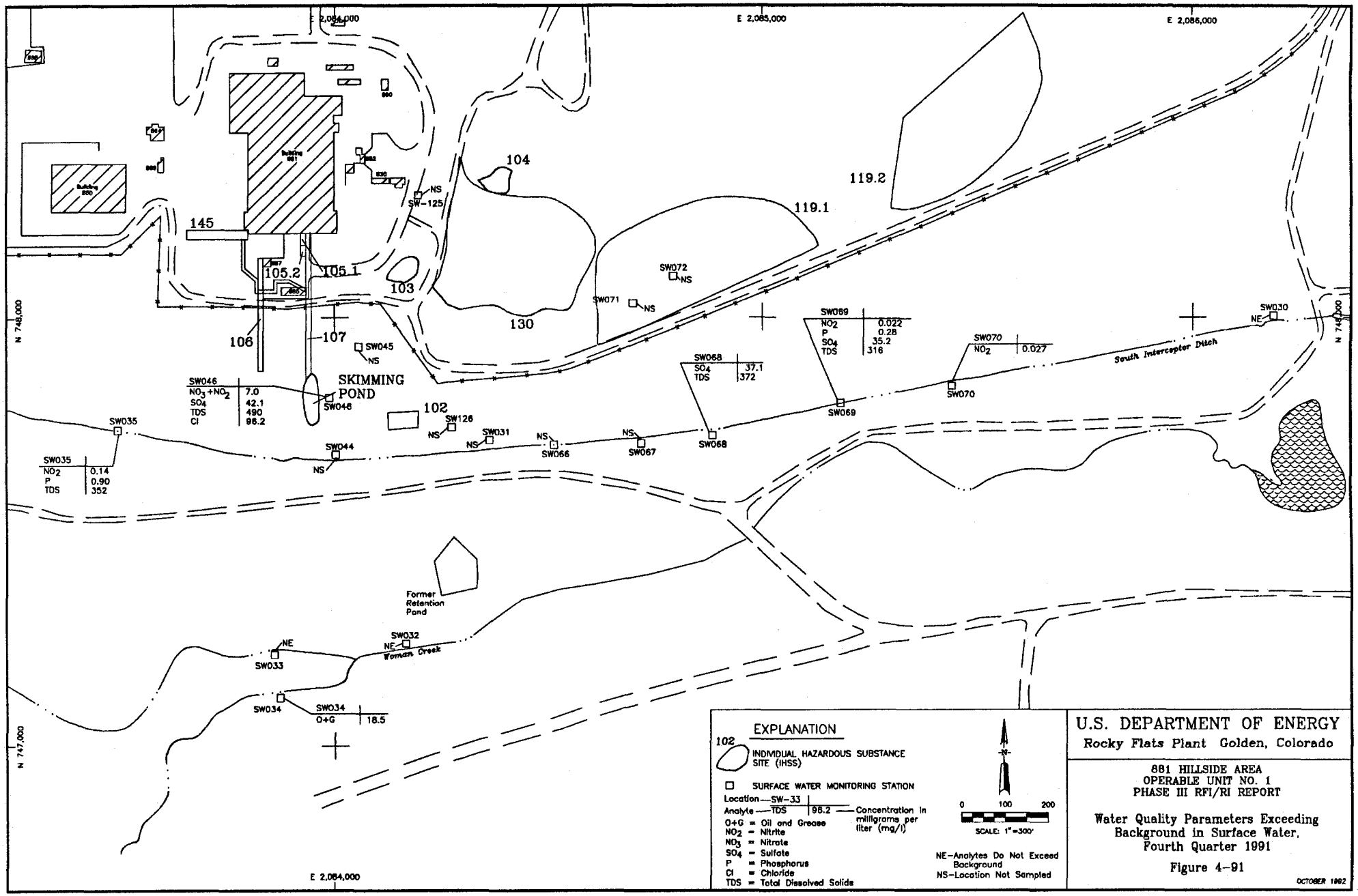
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Metals Exceeding Background in Surface Water, Fourth Quarter 1991

Figure 4-90

OCTOBER 1992



EXPLANATION

102 INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)

SURFACE WATER MONITORING STATION

Location — SW-33

Analyte — TDS | 96.2 — Concentration in milligrams per liter (mg/l)

O+G = Oil and Grease
NO_2 = Nitrite
NO_3 = Nitrate
SO_4 = Sulfate
P = Phosphorus
Cl = Chloride
TDS = Total Dissolved Solids

N

0 100 200

SCALE: 1" = 300'

NE–Analytes Do Not Exceed Background
NS–Location Not Sampled

U.S. DEPARTMENT OF ENERGY

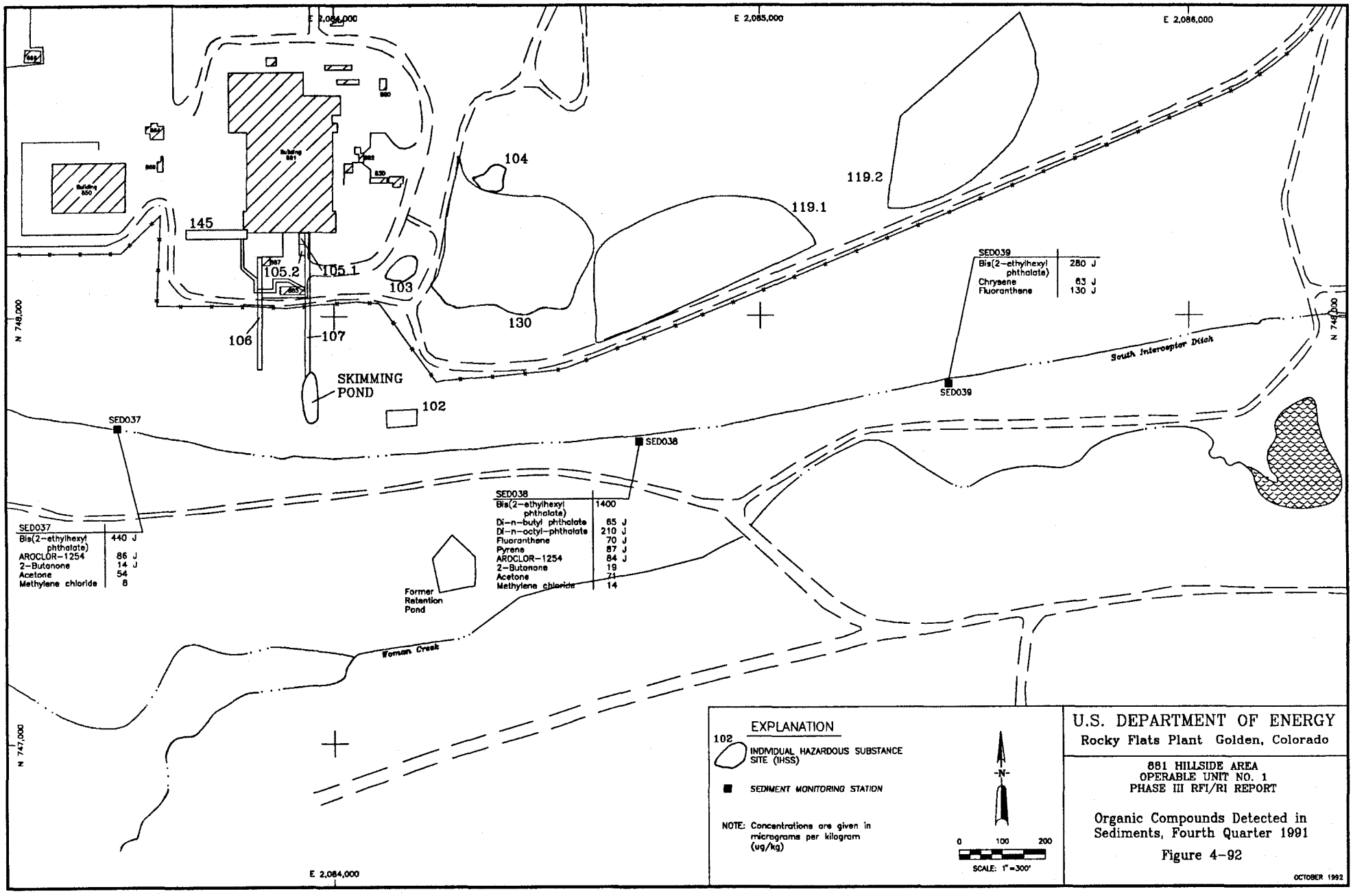
Rocky Flats Plant Golden, Colorado

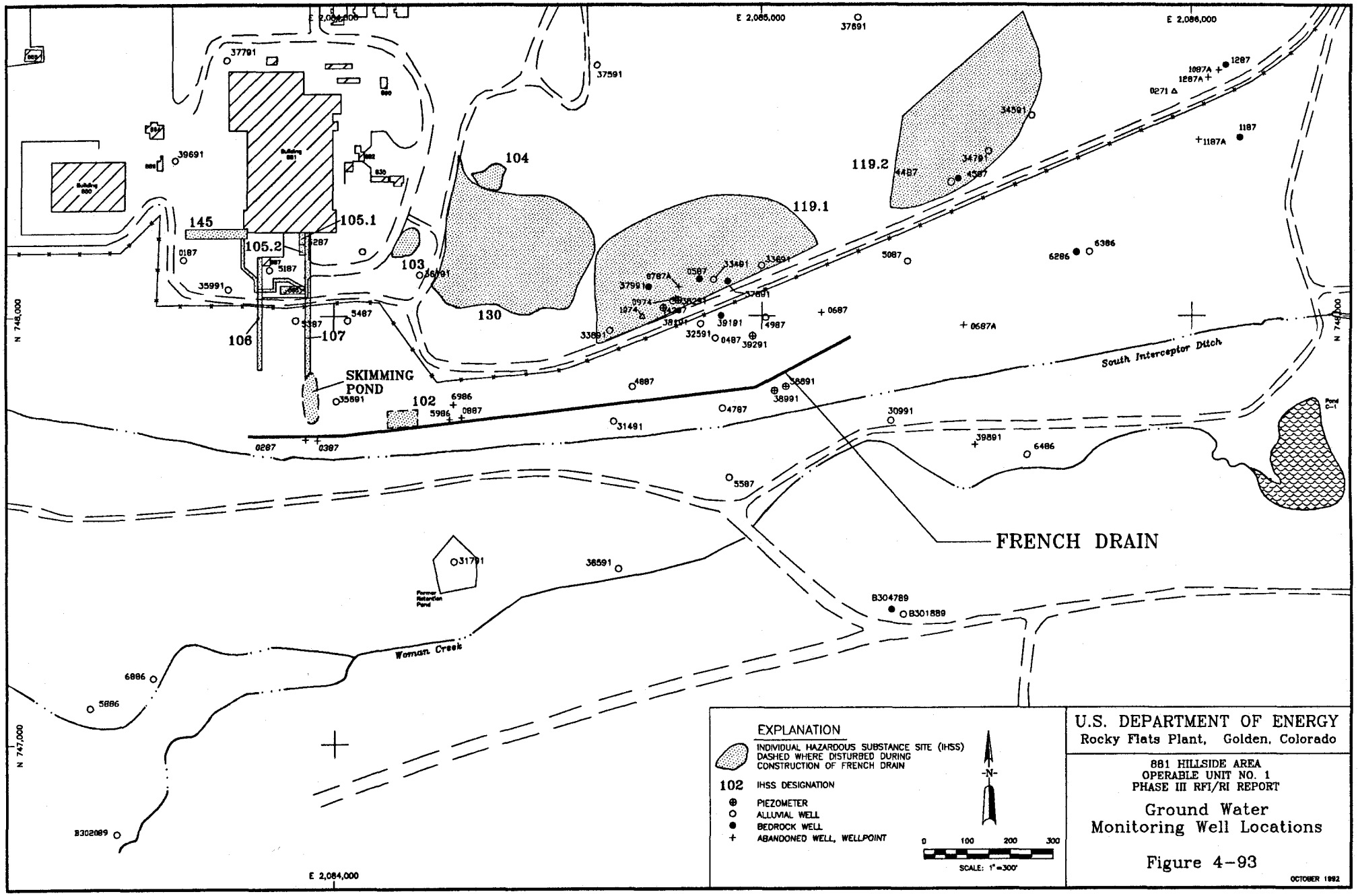
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Water Quality Parameters Exceeding Background in Surface Water, Fourth Quarter 1991

Figure 4–91

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 820
145
105.2
105.1
103
104
119.2
119.1
130
106
107
SKIMMING POND
102
South Interceptor Ditch
Woman Creek
Former Retention Pond
SED037
Bis(2-ethylhexyl phthalate) 440 J
AROCLOR-1254 86 J
2-Butanone 14 J
Acetone 54
Methylene chloride 8
SED038
Bis(2-ethylhexyl phthalate) 1400
Di-n-butyl phthalate 65 J
Di-n-octyl-phthalate 210 J
Fluoranthene 70 J
Pyrene 87 J
AROCLOR-1254 84 J
2-Butanone 19
Acetone 71
Methylene chloride 14
SED039
Bis(2-ethylhexyl phthalate) 280 J
Chrysene 63 J
Fluoranthene 130 J
EXPLANATION
102 INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
SEDIMENT MONITORING STATION
NOTE: Concentrations are given in micrograms per kilogram (ug/kg)
-N-
0 100 200
SCALE: 1" = 300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Organic Compounds Detected in Sediments, Fourth Quarter 1991
Figure 4-92
OCTOBER 1992



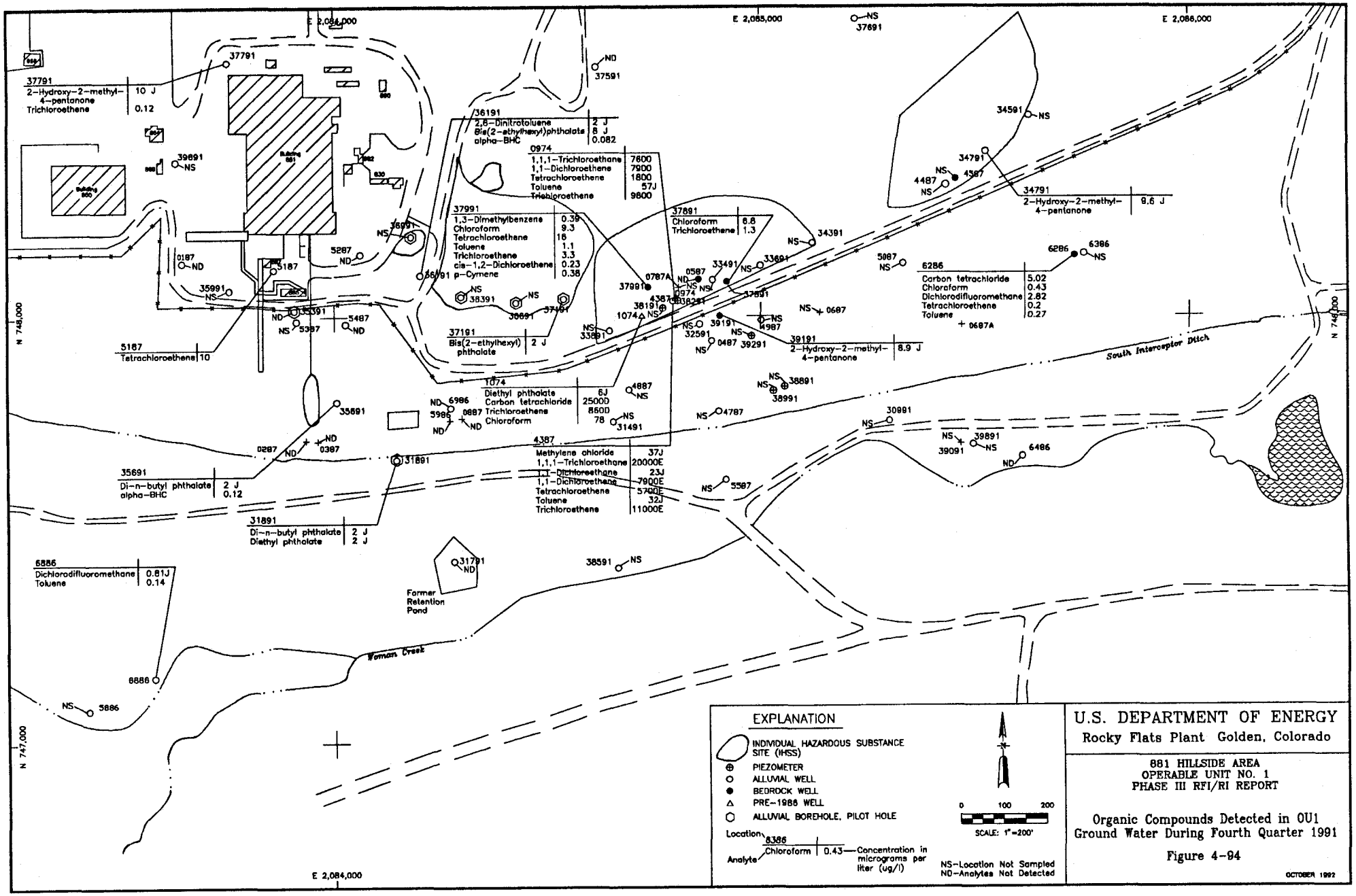
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Ground Water
Monitoring Well Locations

Figure 4-93

OCTOBER 1992



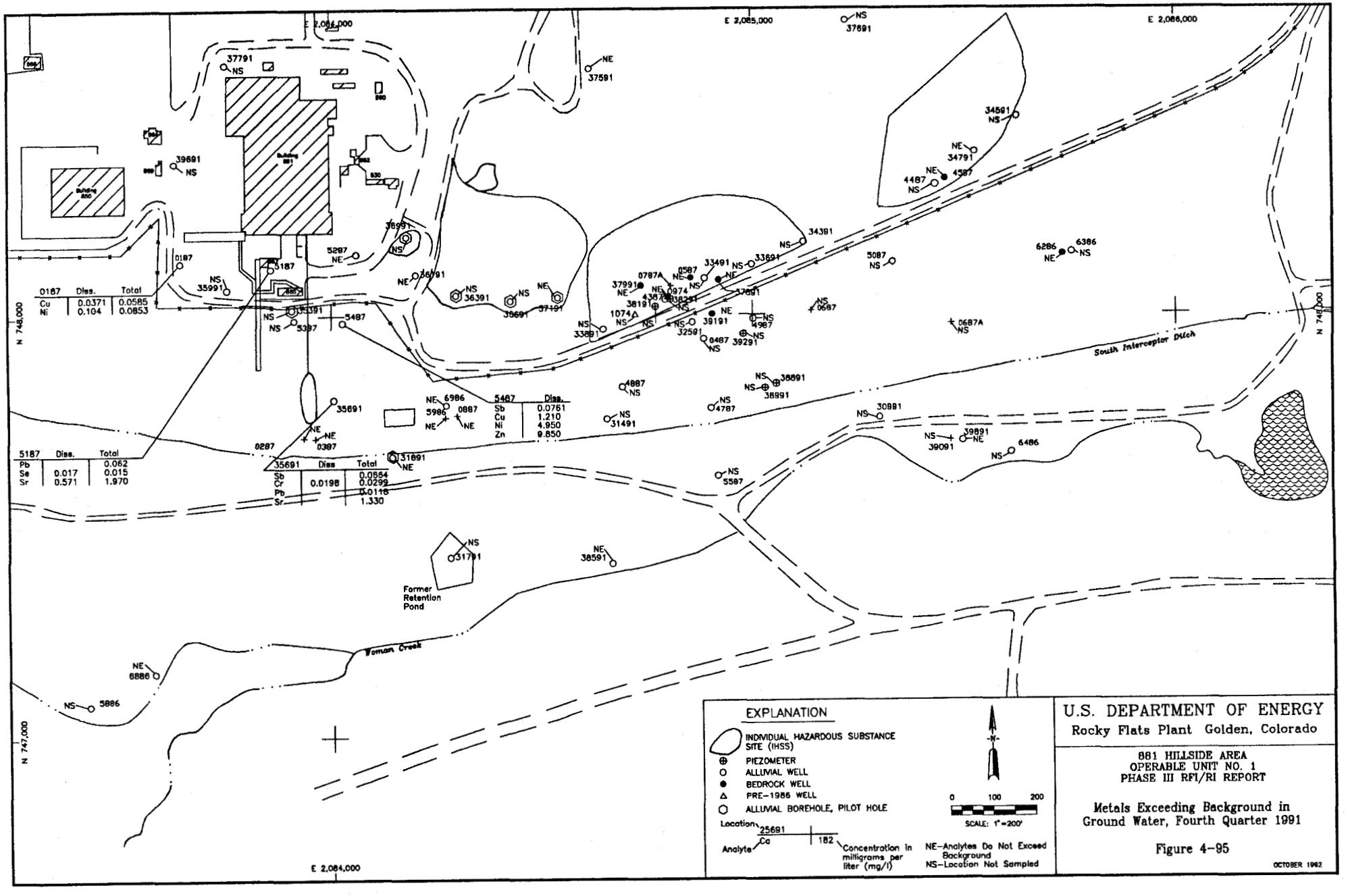
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

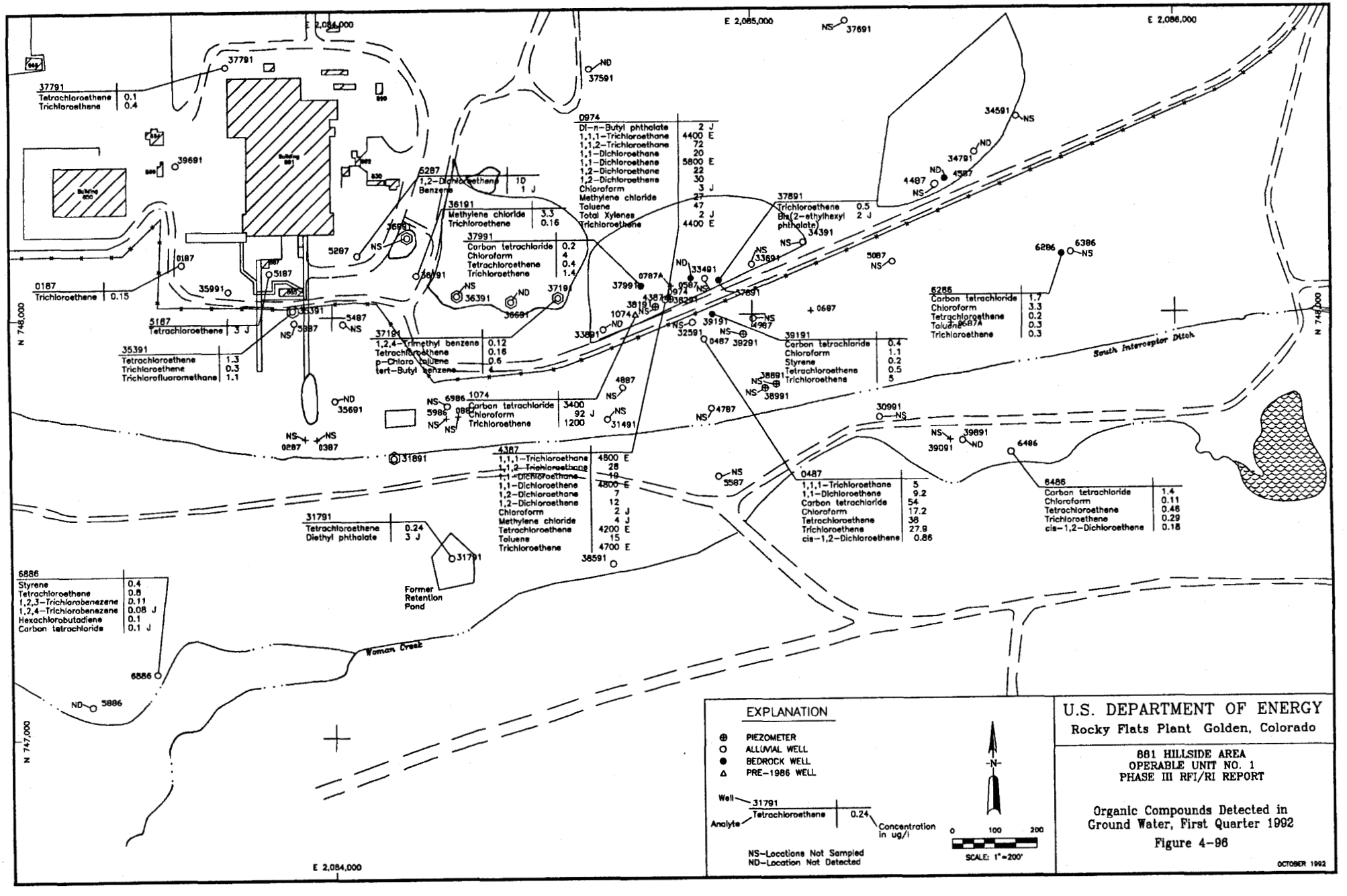
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Organic Compounds Detected in OU1 Ground Water During Fourth Quarter 1991

Figure 4-94

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 886
Former Retention Pond
Woman Creek
South Interceptor Ditch
0187 Diss. Total
Cu 0.0371 0.0585
Ni 0.104 0.0853
5187 Diss. Total
Pb 0.062
Se 0.017 0.015
Sr 0.571 1.970
35691 Diss Total
Sb 0.0564
Cr 0.0198 0.0299
Pb 0.0116
Sr 1.330
5487 Diss.
Sb 0.0761
Cu 1.210
Ni 4.950
Zn 9.850
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
PRE-1986 WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 25691
Analyte Ca 182
Concentration in milligrams per liter (mg/l)
NE-Analytes Do Not Exceed Background
NS-Location Not Sampled
0 100 200
SCALE: 1"=200'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Metals Exceeding Background in Ground Water, Fourth Quarter 1991
Figure 4-95
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
37791
Tetrachloroethene 0.1
Trichloroethene 0.4
0187
Trichloroethene 0.15
5187
Tetrachloroethene 3 J
35391
Tetrachloroethene 1.3
Trichloroethene 0.3
Trichlorofluoromethane 1.1
6287
1,2-Dichloroethane ND
Benzene 1 J
36191
Methylene chloride 3.3
Trichloroethene 0.16
37991
Carbon tetrachloride 0.2
Chloroform 4
Tetrachloroethene 0.4
Trichloroethene 1.4
37191
1,2,4-Trimethyl benzene 0.12
Tetrachloroethene 0.16
p-Chloro toluene 0.6
tert-Butyl benzene 4
1074
Carbon tetrachloride 3400
Chloroform 92 J
Trichloroethene 1200
0974
Di-n-Butyl phthalate 2 J
1,1,1-Trichloroethane 4400 E
1,1,2-Trichloroethane 72
1,1-Dichloroethane 20
1,1-Dichloroethene 5800 E
1,2-Dichloroethane 22
1,2-Dichloroethene 30
Chloroform 3 J
Methylene chloride 27
Toluene 47
Total Xylenes 2 J
Trichloroethene 4400 E
4387
1,1,1-Trichloroethane 4600 E
1,1,2-Trichloroethane 28
1,1-Dichloroethane 19
1,1-Dichloroethene 4800 E
1,2-Dichloroethane 7
1,2-Dichloroethene 12
Chloroform 2 J
Methylene chloride 4 J
Tetrachloroethene 4200 E
Toluene 15
Trichloroethene 4700 E
37891
Trichloroethene 0.5
Bis(2-ethylhexyl phthalate) 2 J
39191
Carbon tetrachloride 0.4
Chloroform 1.1
Styrene 0.2
Tetrachloroethene 0.5
Trichloroethene 5
6286
Carbon tetrachloride 1.7
Chloroform 3.3
Tetrachloroethene 0.2
Toluene 0.3
Trichloroethene 0.3
0487
1,1,1-Trichloroethane 5
1,1-Dichloroethene 9.2
Carbon tetrachloride 54
Chloroform 17.2
Tetrachloroethene 38
Trichloroethene 27.9
cis-1,2-Dichloroethene 0.86
6486
Carbon tetrachloride 1.4
Chloroform 0.11
Tetrachloroethene 0.46
Trichloroethene 0.29
cis-1,2-Dichloroethene 0.18
31791
Tetrachloroethene 0.24
Diethyl phthalate 3 J
6886
Styrene 0.4
Tetrachloroethene 0.8
1,2,3-Trichlorobenezene 0.11
1,2,4-Trichlorobenezene 0.08 J
Hexachlorobutadiene 0.1
Carbon tetrachloride 0.1 J
Former Retention Pond
South Interceptor Ditch
Woman Creek
EXPLANATION
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
PRE-1986 WELL
Well
Analyte
Concentration in ug/l
NS-Locations Not Sampled
ND-Location Not Detected
N
0 100 200
SCALE: 1"=200'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
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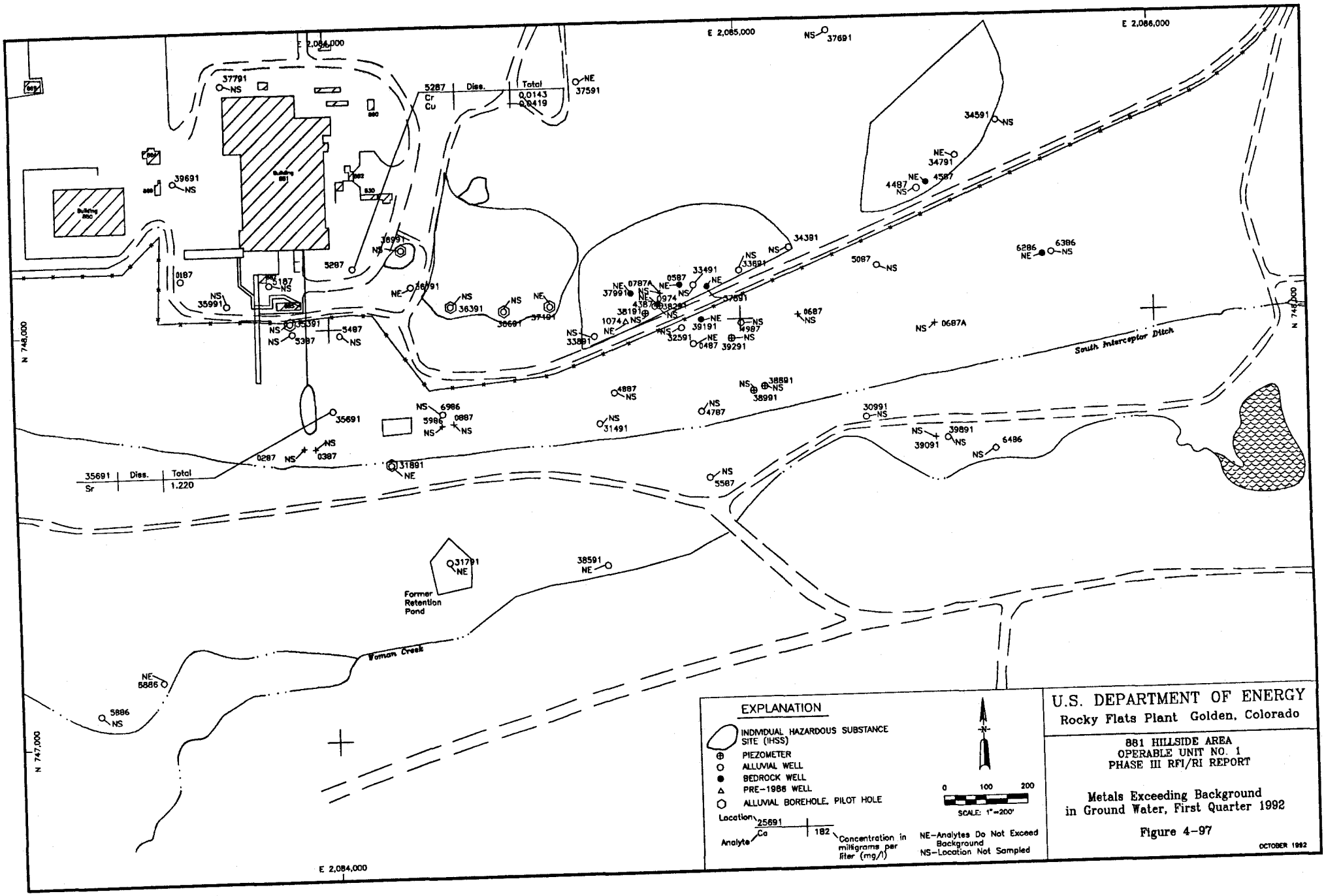
PHASE III RFI/RI REPORT
Organic Compounds Detected in Ground Water, First Quarter 1992
Figure 4-96
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
5287 | Diss. | Total
Cr | 0.0143
Cu | 0.0419
35691 | Diss. | Total
Sr | 1.220
Former Retention Pond
Woman Creek
South Interceptor Ditch
EXPLANATION
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS)
PIEZOMETER
ALLUVIAL WELL
BEDROCK WELL
PRE-1986 WELL
ALLUVIAL BOREHOLE, PILOT HOLE
Location 25691
Analyte Ca 182
Concentration in milligrams per liter (mg/l)
NE-Analytes Do Not Exceed Background
NS-Location Not Sampled
0 100 200
SCALE: 1"=200'
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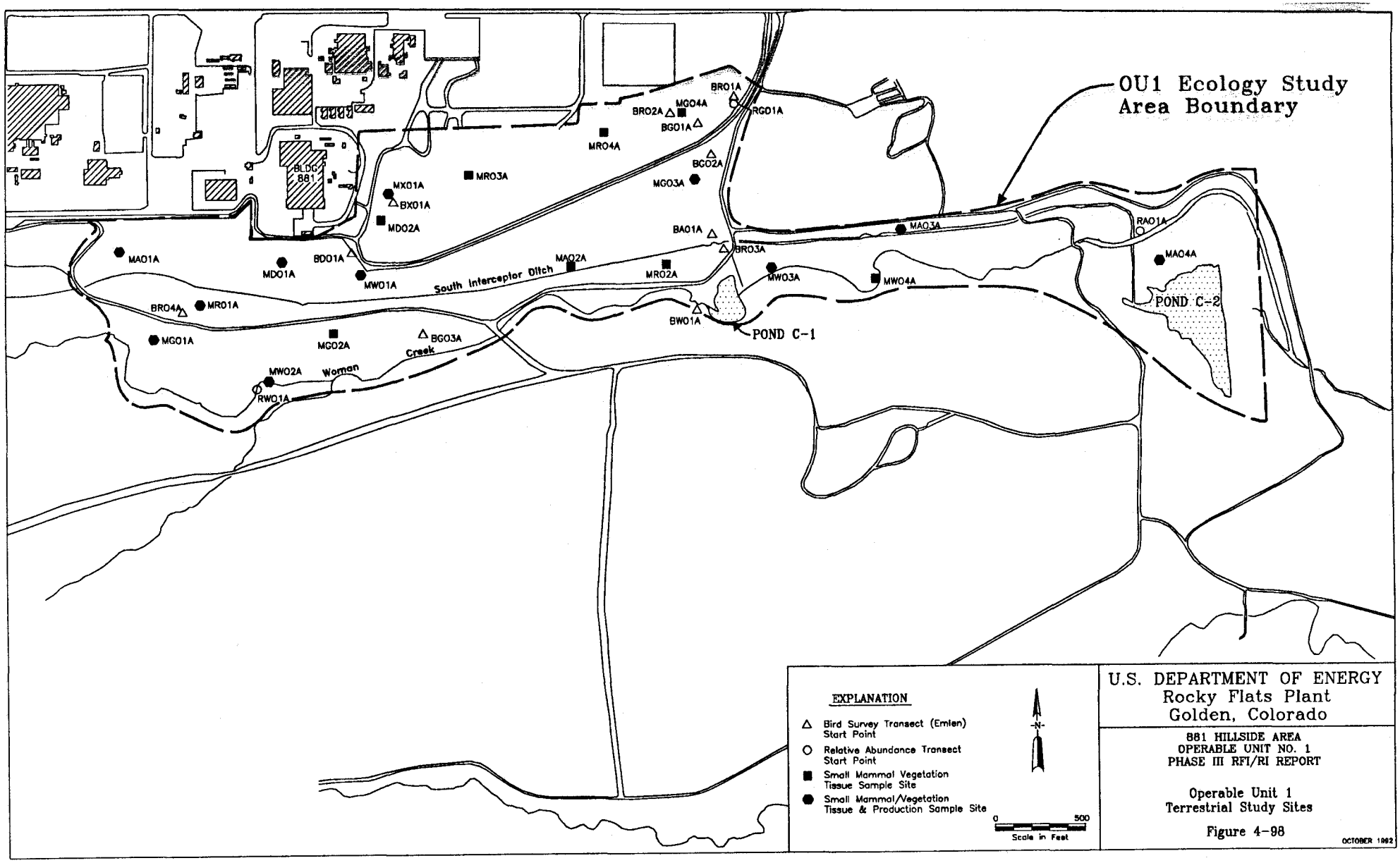
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Metals Exceeding Background in Ground Water, First Quarter 1992
Figure 4-97
OCTOBER 1992


OU1 Ecology Study Area Boundary
BLDG 881
MX01A
BX01A
MD02A
MR03A
MR04A
BRO1A
RGD01A
BRO2A
MGO4A
BGO1A
BCO2A
MGO3A
BA01A
BRO3A
MAO3A
RAO1A
MAO4A
POND C-2
POND C-1
MAO1A
MDO1A
BDO1A
MWO1A
South Interceptor Ditch
MAO2A
MRO2A
MWO3A
MWO4A
BWO1A
BRO4A
MRO1A
MGO1A
MGO2A
BGO3A
Woman Creek
MWO2A
RWO1A
EXPLANATION
Bird Survey Transect (Emlen) Start Point
Relative Abundance Transect Start Point
Small Mammal Vegetation Tissue Sample Site
Small Mammal/Vegetation Tissue & Production Sample Site
N
0
500
Scale in Feet
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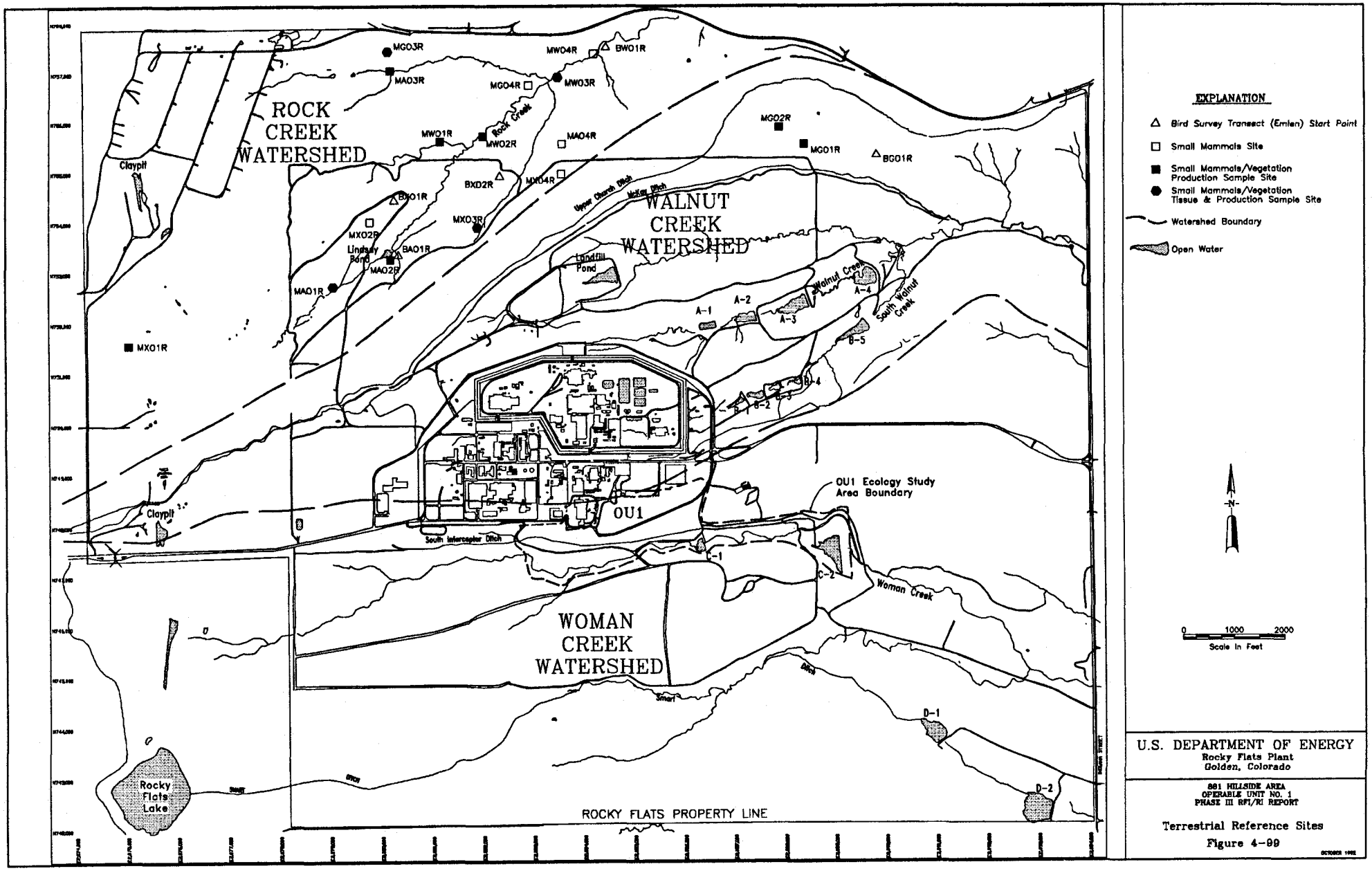
Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Operable Unit 1
Terrestrial Study Sites
Figure 4-98
OCTOBER 1992



EXPLANATION

- △ Bird Survey Transect (Emlen) Start Point
- □ Small Mammals Site
- ■ Small Mammals/Vegetation Production Sample Site
- ● Small Mammals/Vegetation Tissue & Production Sample Site
- Watershed Boundary
- Open Water

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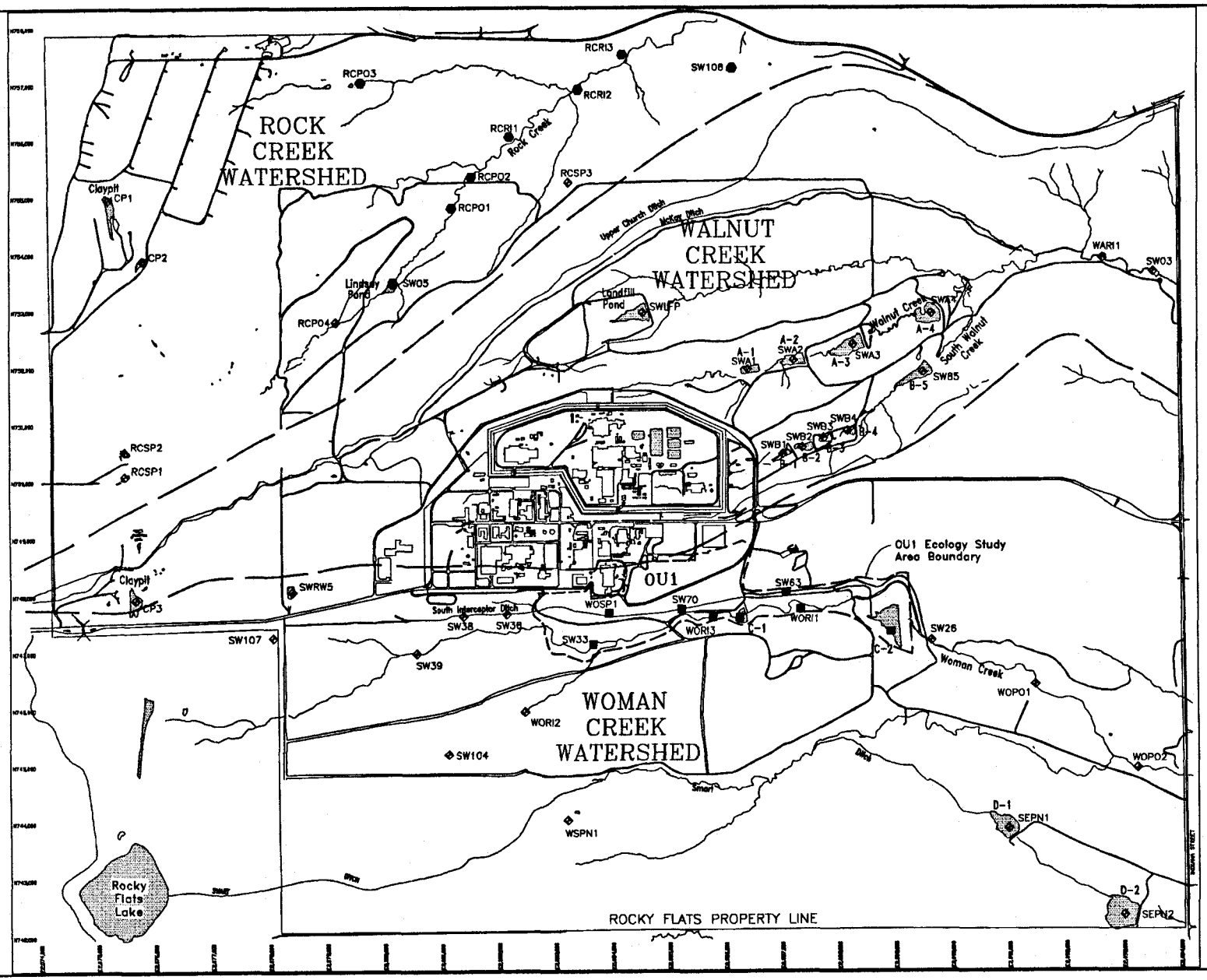
Terrestrial Reference Sites

Figure 4-99

OCTOBER 1992



EXPLANATION

- OU1 Aquatic Study Sites
- OU1 Aquatic Reference Sites
- Other Sample Sites
- Watershed Boundary
- Open Water

0 1000 2000
Scale in Feet

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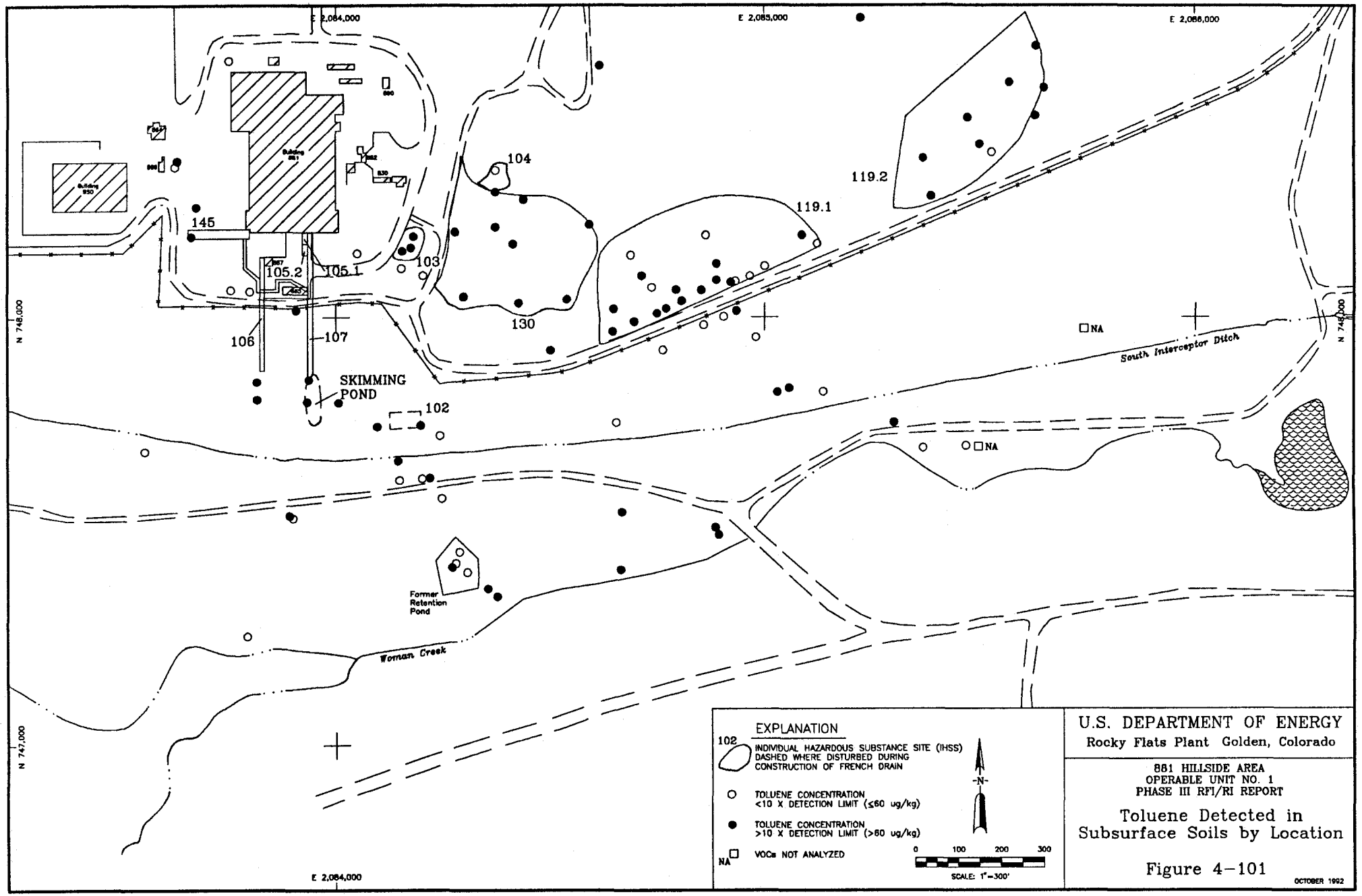
PHASE III RFI/RI REPORT

Aquatic Study Sites and Aquatic Reference Sites
Figure 4-100

OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 881
Building 850
145
105.2
105.1
103
104
130
119.1
119.2
106
107
SKIMMING POND
102
NA
South Interceptor Ditch
Former Retention Pond
Woman Creek
EXPLANATION
102 INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
TOLUENE CONCENTRATION <10 X DETECTION LIMIT (≤60 ug/kg)
TOLUENE CONCENTRATION >10 X DETECTION LIMIT (>60 ug/kg)
NA VOCs NOT ANALYZED
-N-
0 100 200 300
SCALE: 1"=300'
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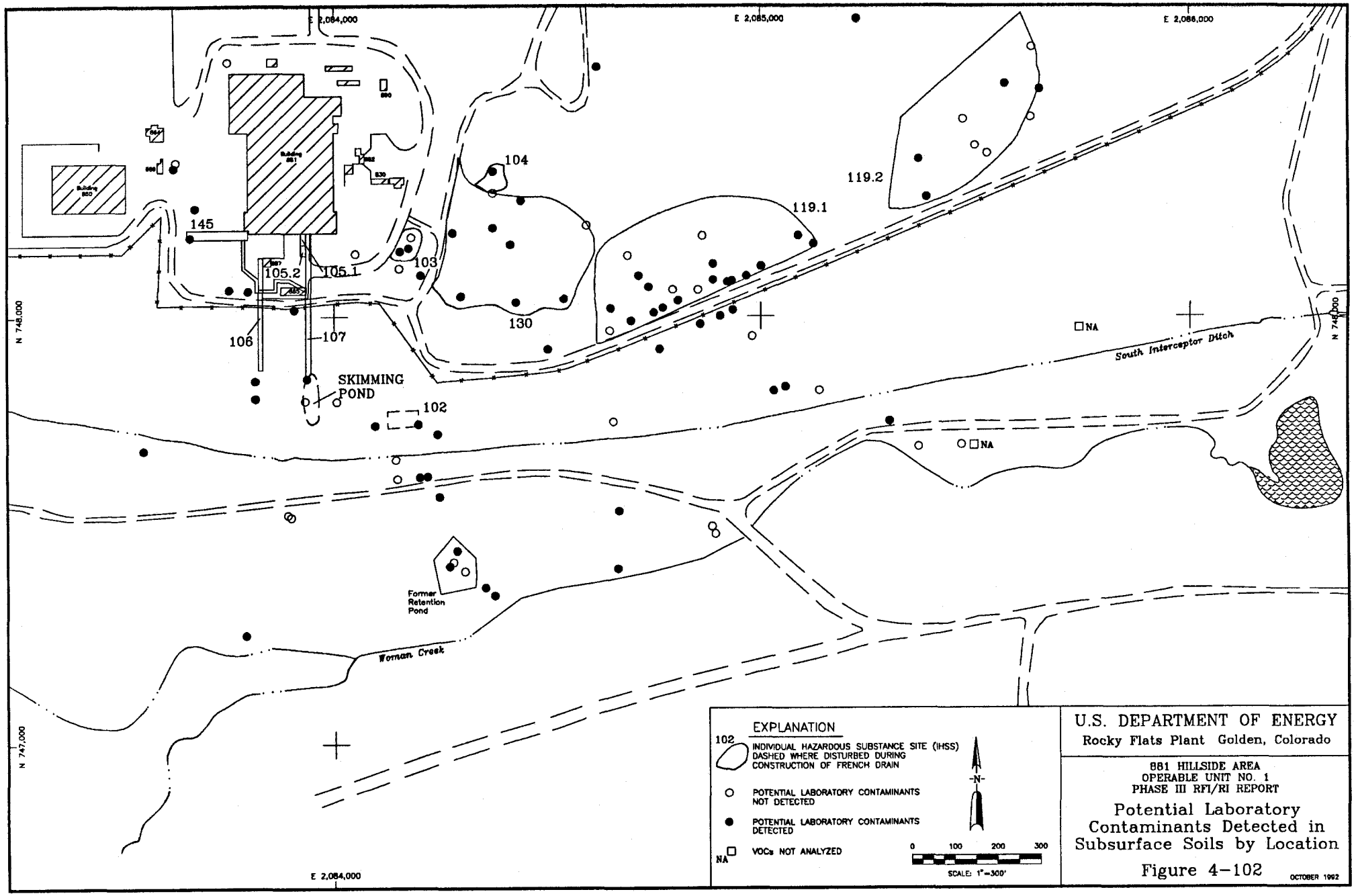
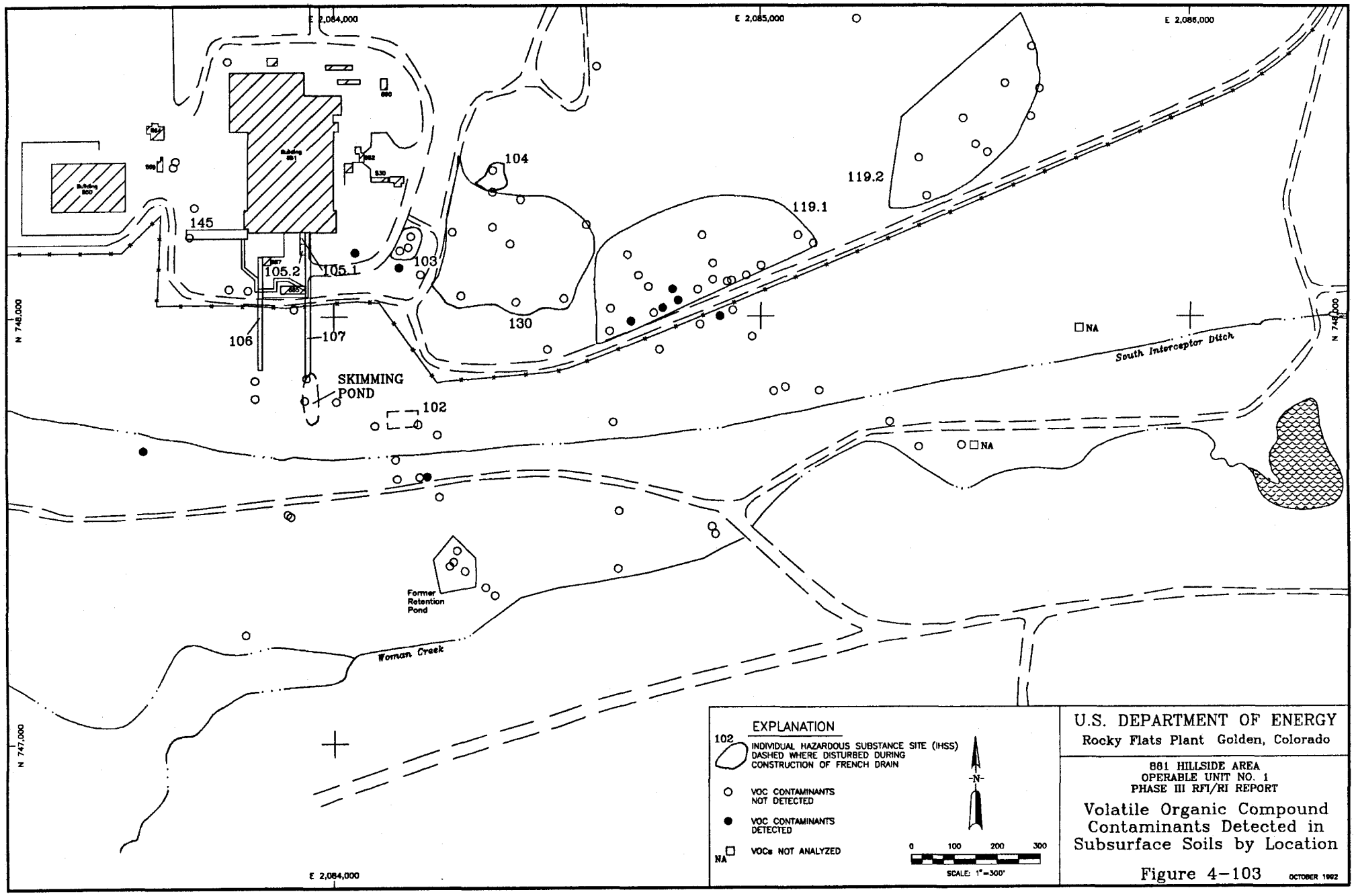
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Toluene Detected in Subsurface Soils by Location
Figure 4-101
OCTOBER 1992


E 2,084,000
E 2,085,000
E 2,086,000
N 748,000
N 747,000
Building 850
Building 881
145
105.2
105.1
103
104
130
119.1
119.2
106
107
SKIMMING POND
102
NA
South Interceptor Ditch
Former Retention Pond
Woman Creek
EXPLANATION
102
INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) DASHED WHERE DISTURBED DURING CONSTRUCTION OF FRENCH DRAIN
POTENTIAL LABORATORY CONTAMINANTS NOT DETECTED
POTENTIAL LABORATORY CONTAMINANTS DETECTED
NA
VOCs NOT ANALYZED
N
0 100 200 300
SCALE: 1"=300'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Potential Laboratory Contaminants Detected in Subsurface Soils by Location
Figure 4-102
OCTOBER 1992



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881 HILLSIDE AREA
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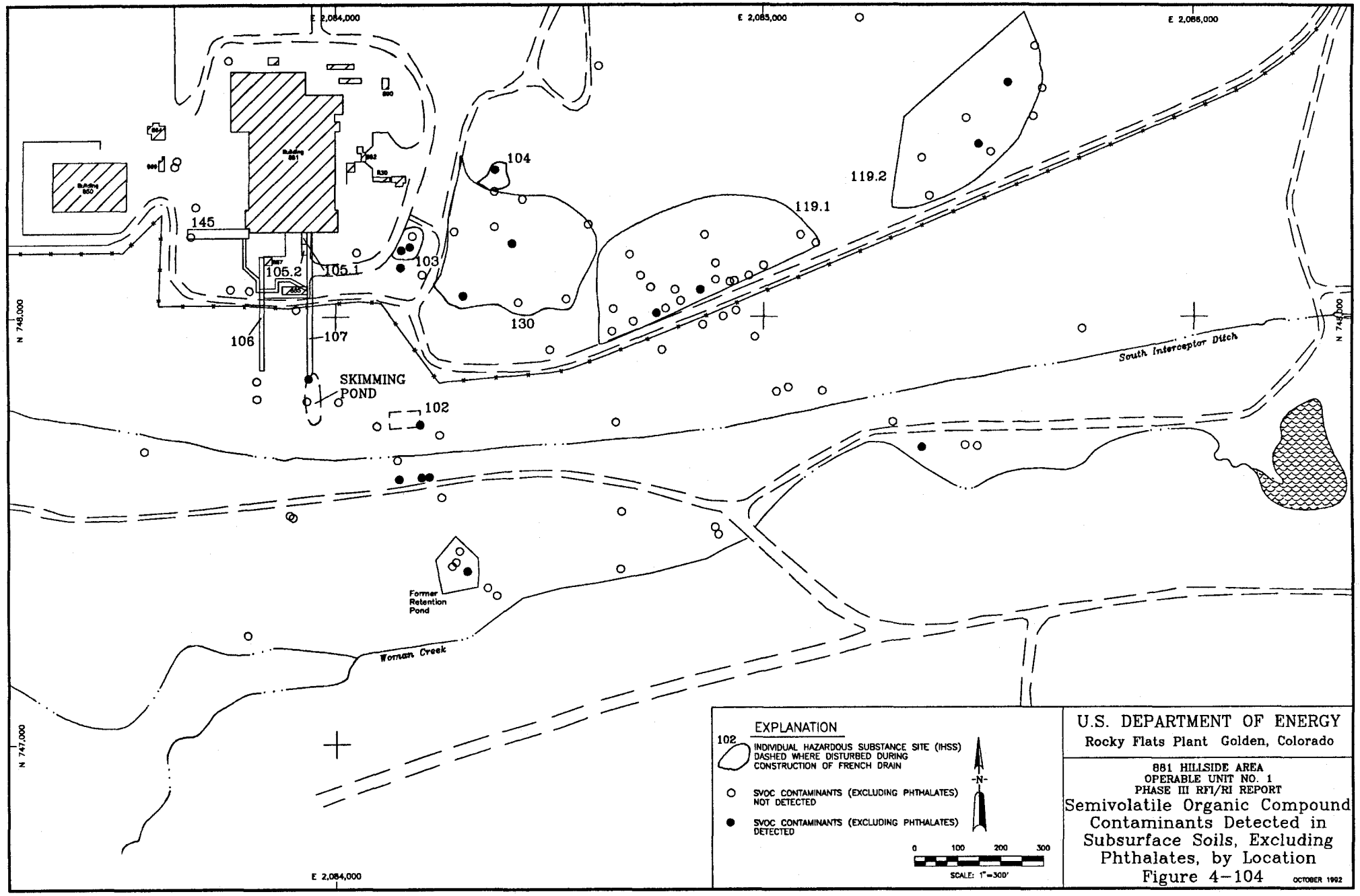
PHASE III RFI/RI REPORT

Volatile Organic Compound Contaminants Detected in Subsurface Soils by Location

Figure 4-103

OCTOBER 1992



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881 HILLSIDE AREA
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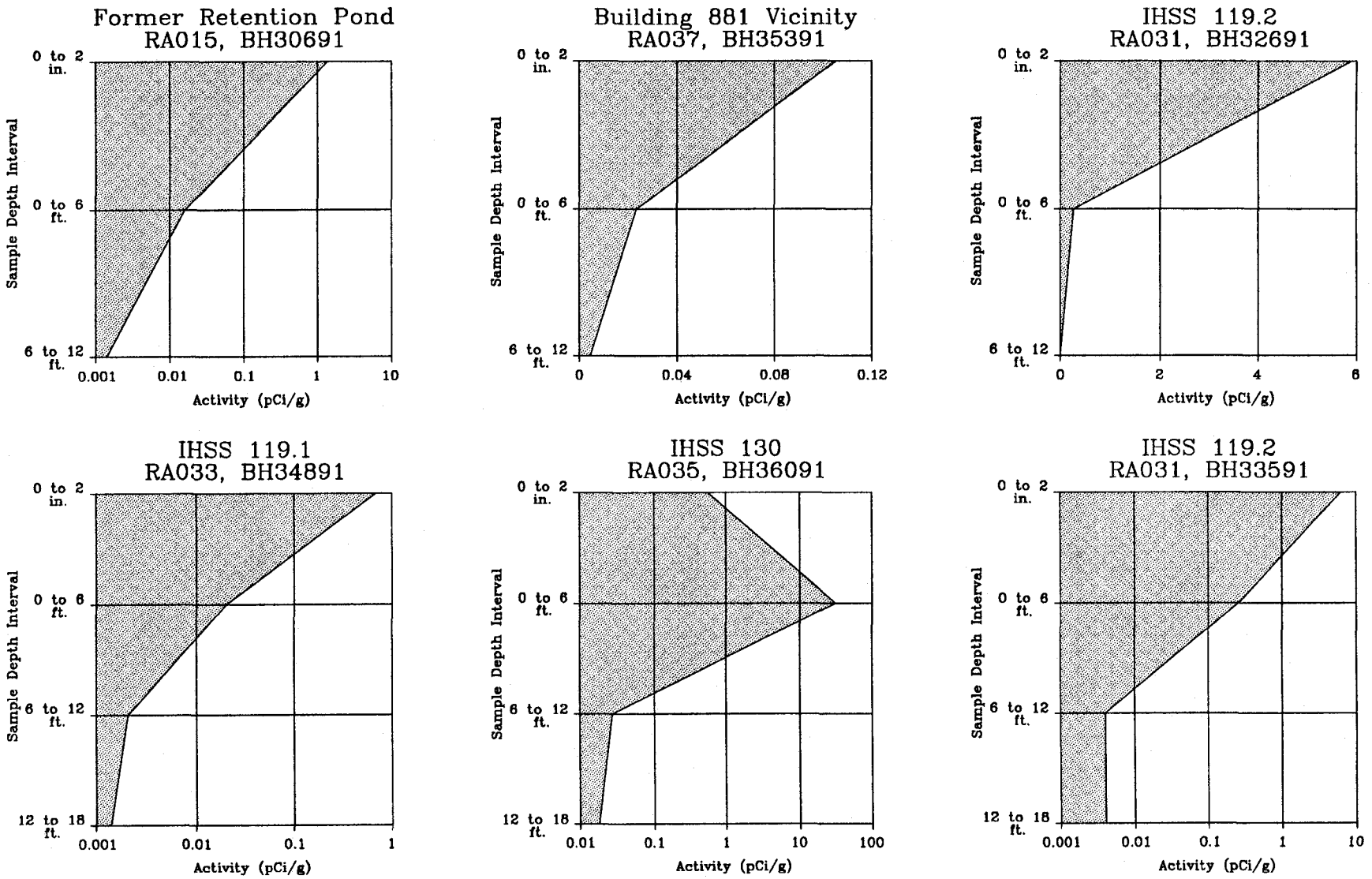
PHASE III RFI/RI REPORT

Semivolatile Organic Compound Contaminants Detected in Subsurface Soils, Excluding Phthalates, by Location

Figure 4-104

OCTOBER 1992



NOTE:
Activity is represented on both logarithimic and linear scales based on actual analytical results for soil samples.

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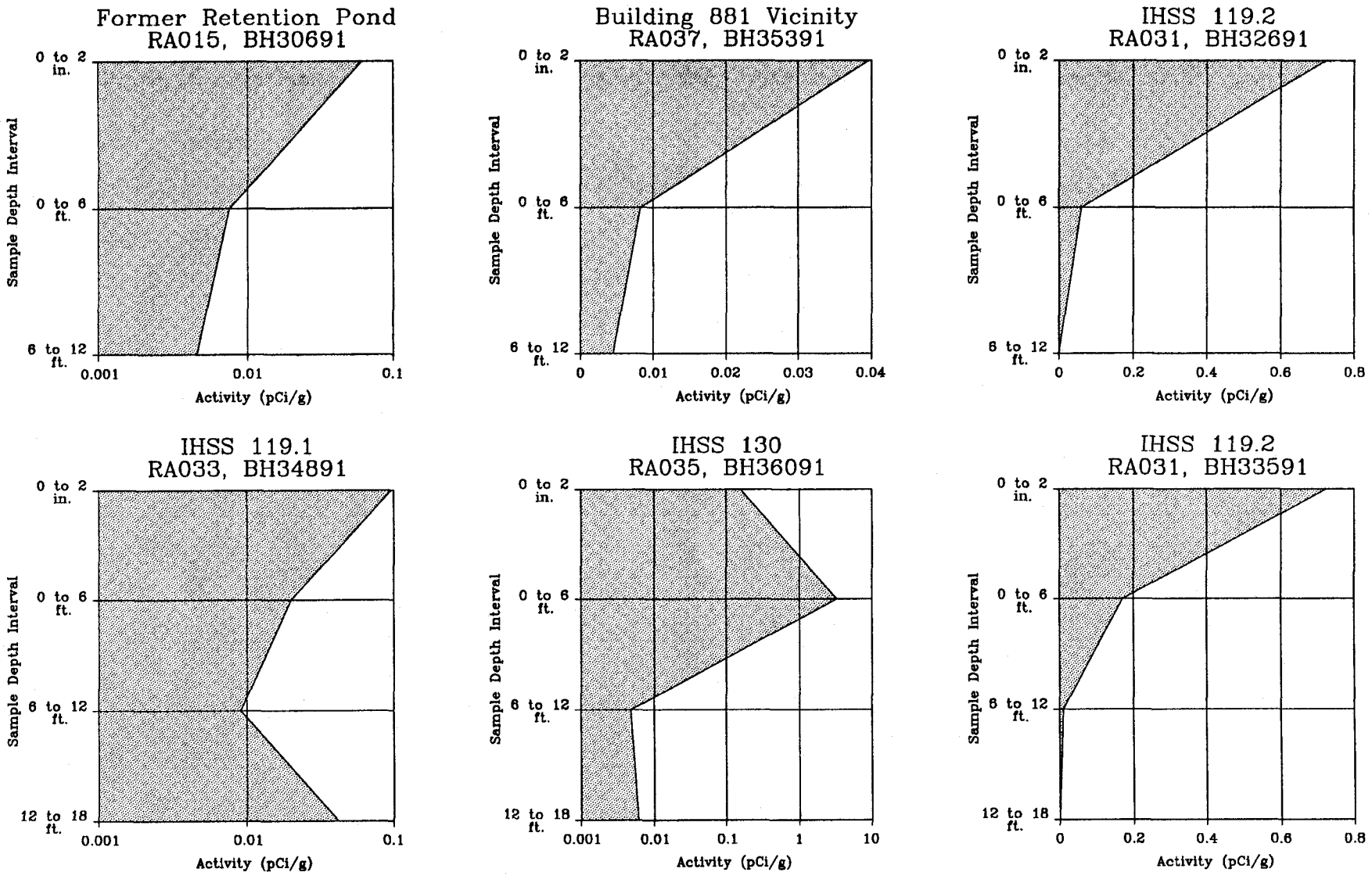
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Plutonium-239,-240
Activity vs Depth Soil Profiles

Figure 4-105 OCTOBER 1992



NOTE:
Activity is represented on both logarithimic and linear scales based on actual analytical results for soil samples.

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PHASE III RFI/RI REPORT

Americium-241
Activity vs Depth Soil Profiles

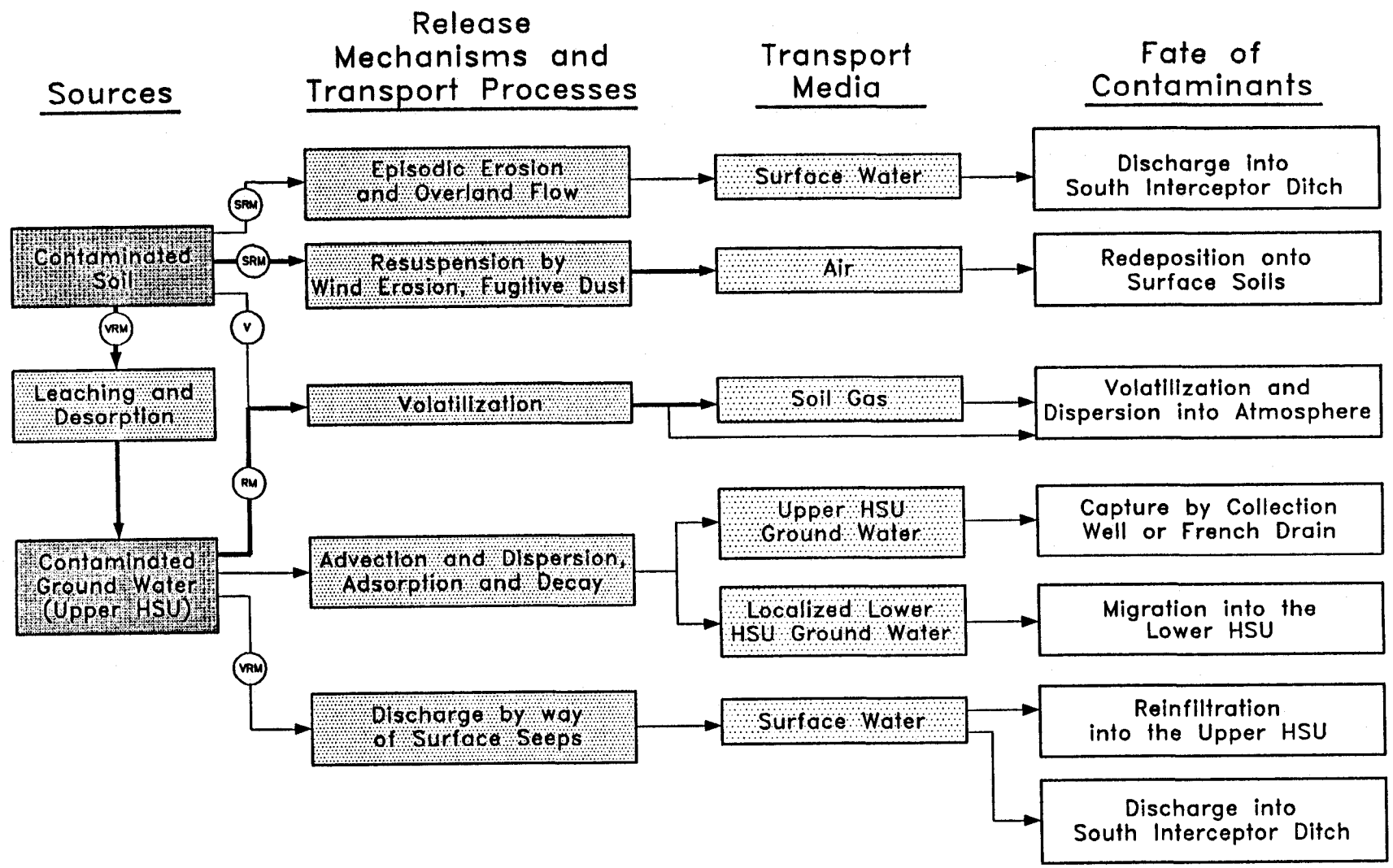
Figure 4-106 OCTOBER 1992

Section 5.0 · Figures

Contaminant Fate and Transport

Phase III RFI/RI Report

U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881
1 OU1 OU1
side 881 Hill
U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881



HSU– Hydrostratigraphic Unit

→ Predominant Mechanisms or Processes

Analyte Groups

V VOCs
S SVOCs
R Radionuclides
M Metals

(VRM) Analyte Groups Affected

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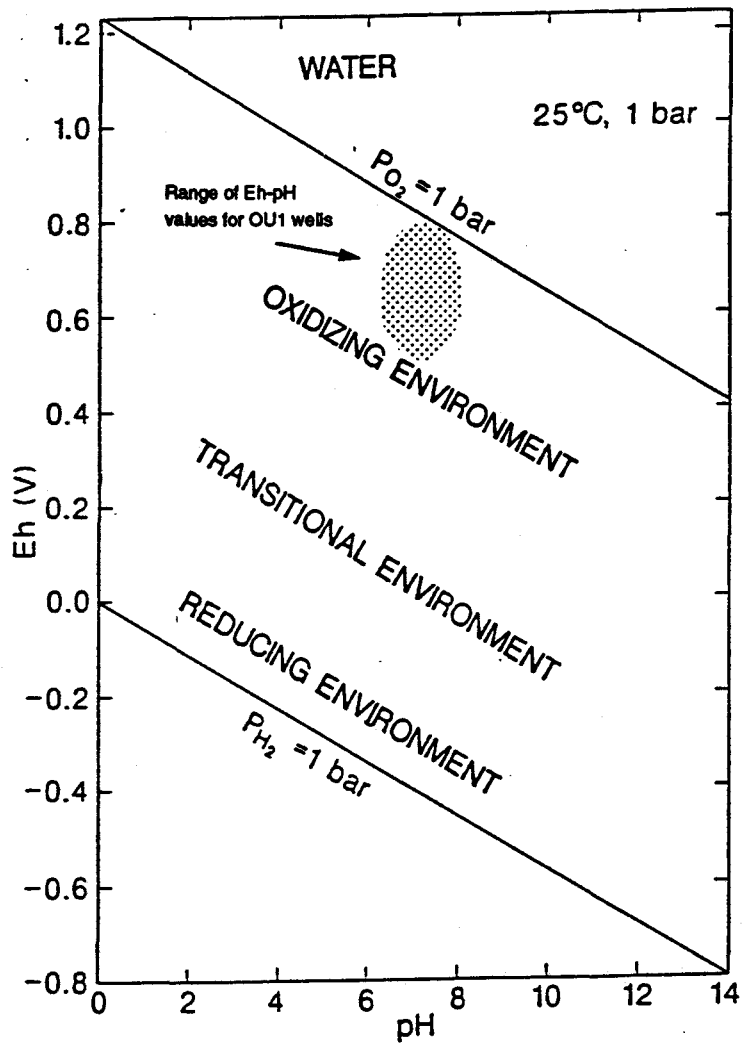
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
REMEDIAL INVESTIGATION REPORT

Fate and Transport Conceptual Model for OU1

Figure 5–1

OCTOBER 1992



Note

Eh-pH diagrams show general ranges of oxidizing, transitional, and reducing environments in natural systems. OU1 groundwater values are plotted as crosses for reference.

Source: Brookins 1988.

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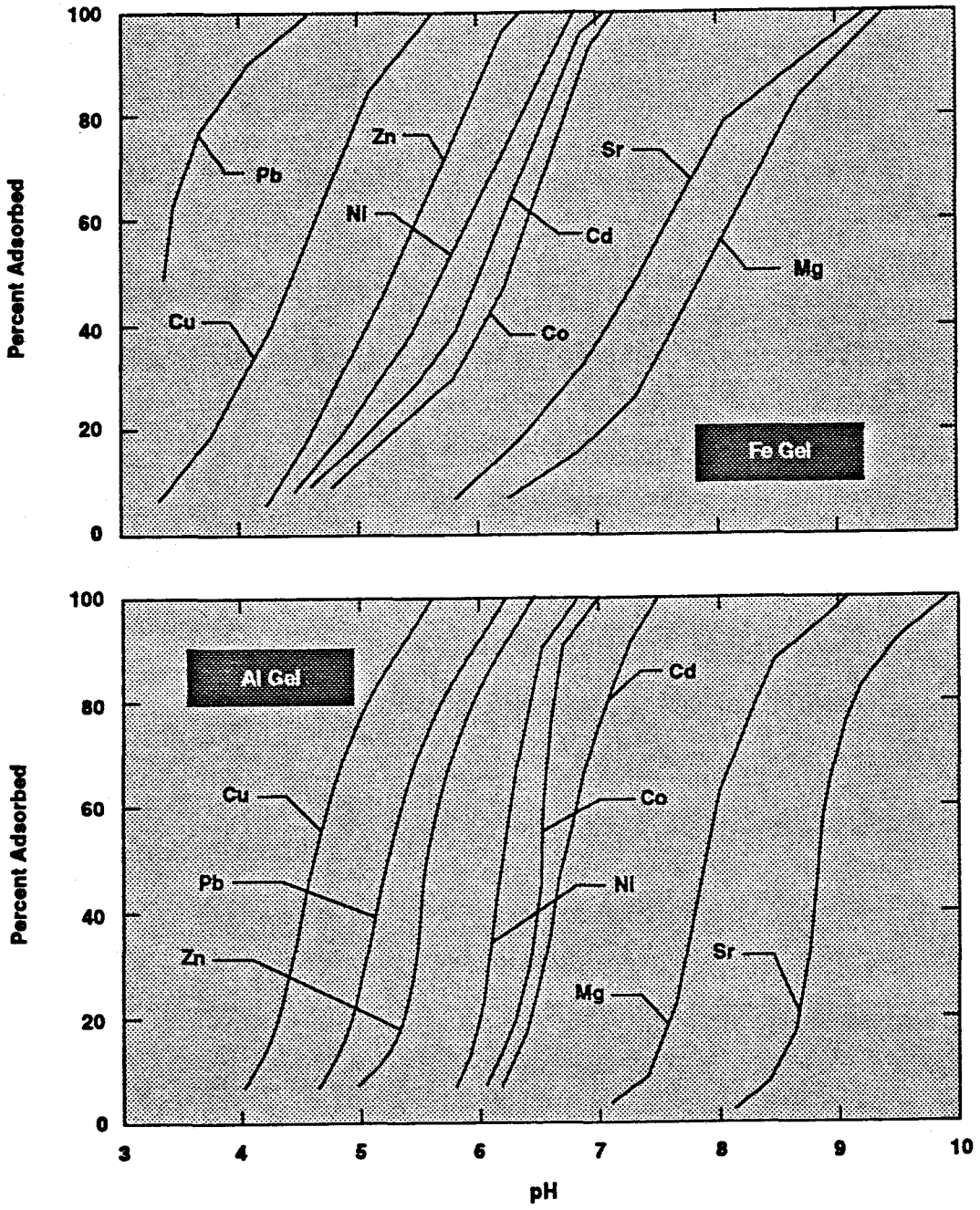
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Eh-pH Diagram

Figure 5-2

OCTOBER 1992



After Kinniburgh et al. 1976.

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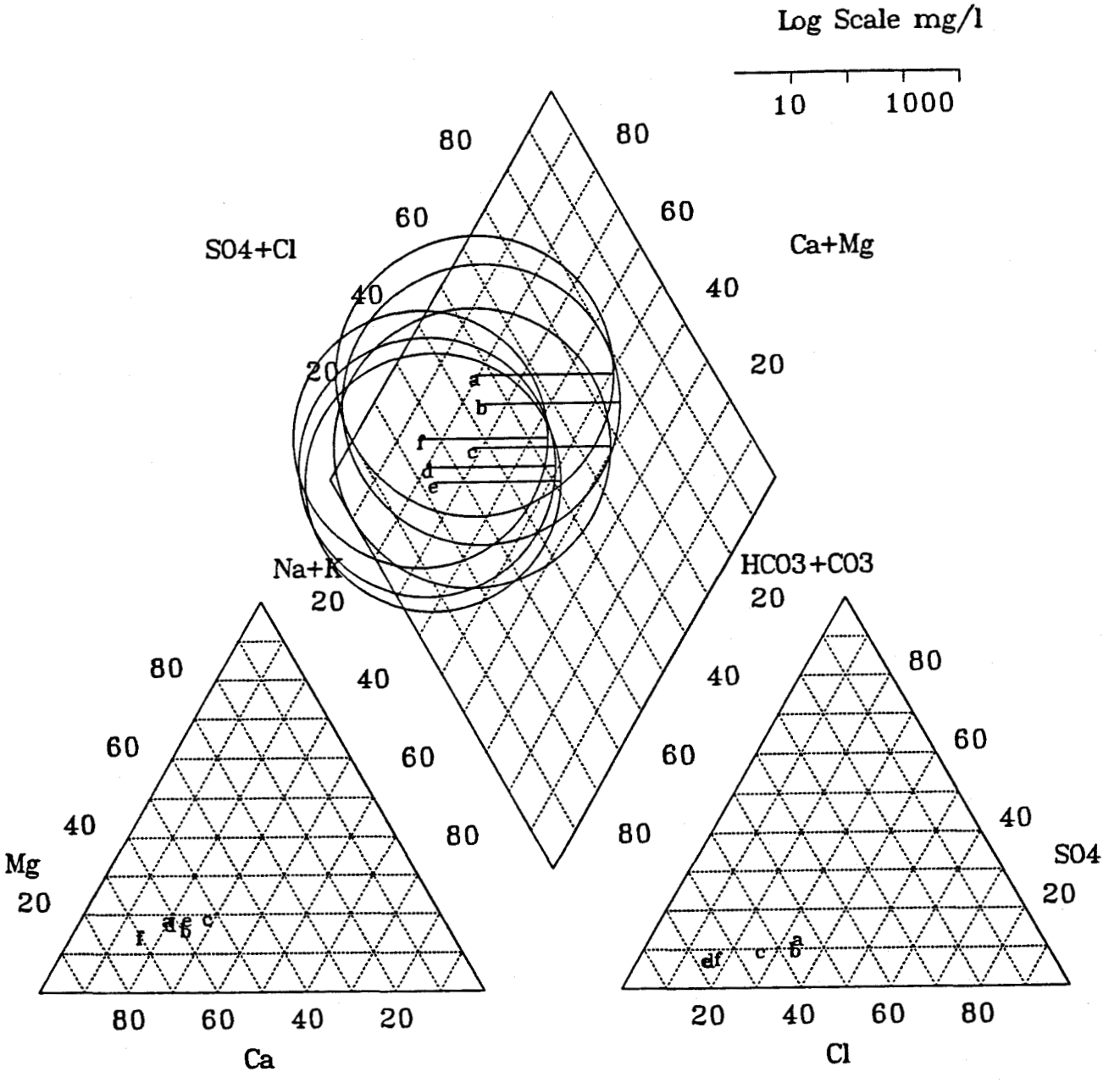
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

The Effect of Increasing pH Activity on Cation Adsorption

Figure 5-3

OCTOBER 1992



Log Scale

Log of total dissolved solids concentration represented by radius of circle.

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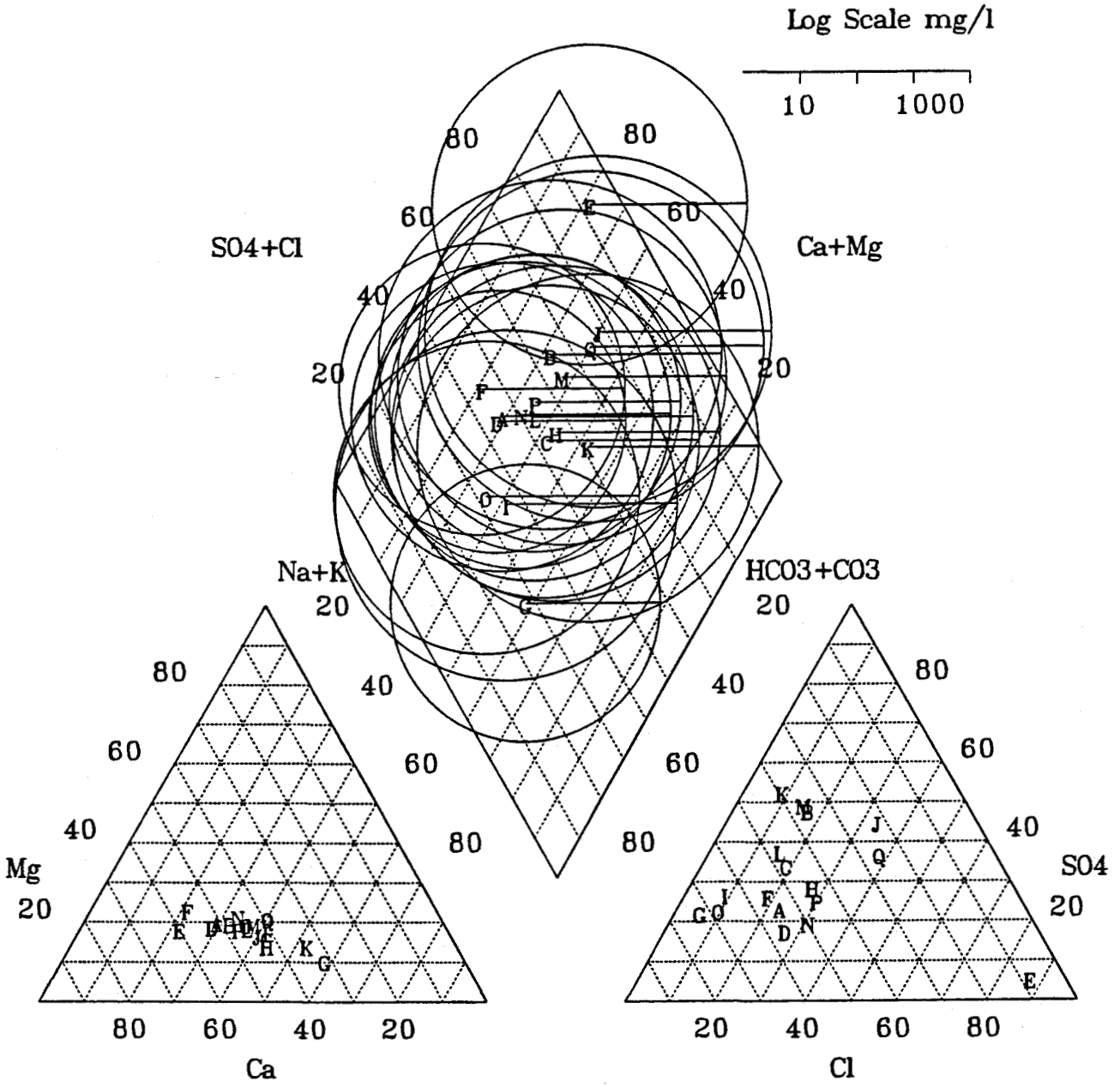
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Piper Plot of Surface Water at OU1

Figure 5-6

OCTOBER 1992



Log Scale

Log of total dissolved solids concentration represented by radius of circle.

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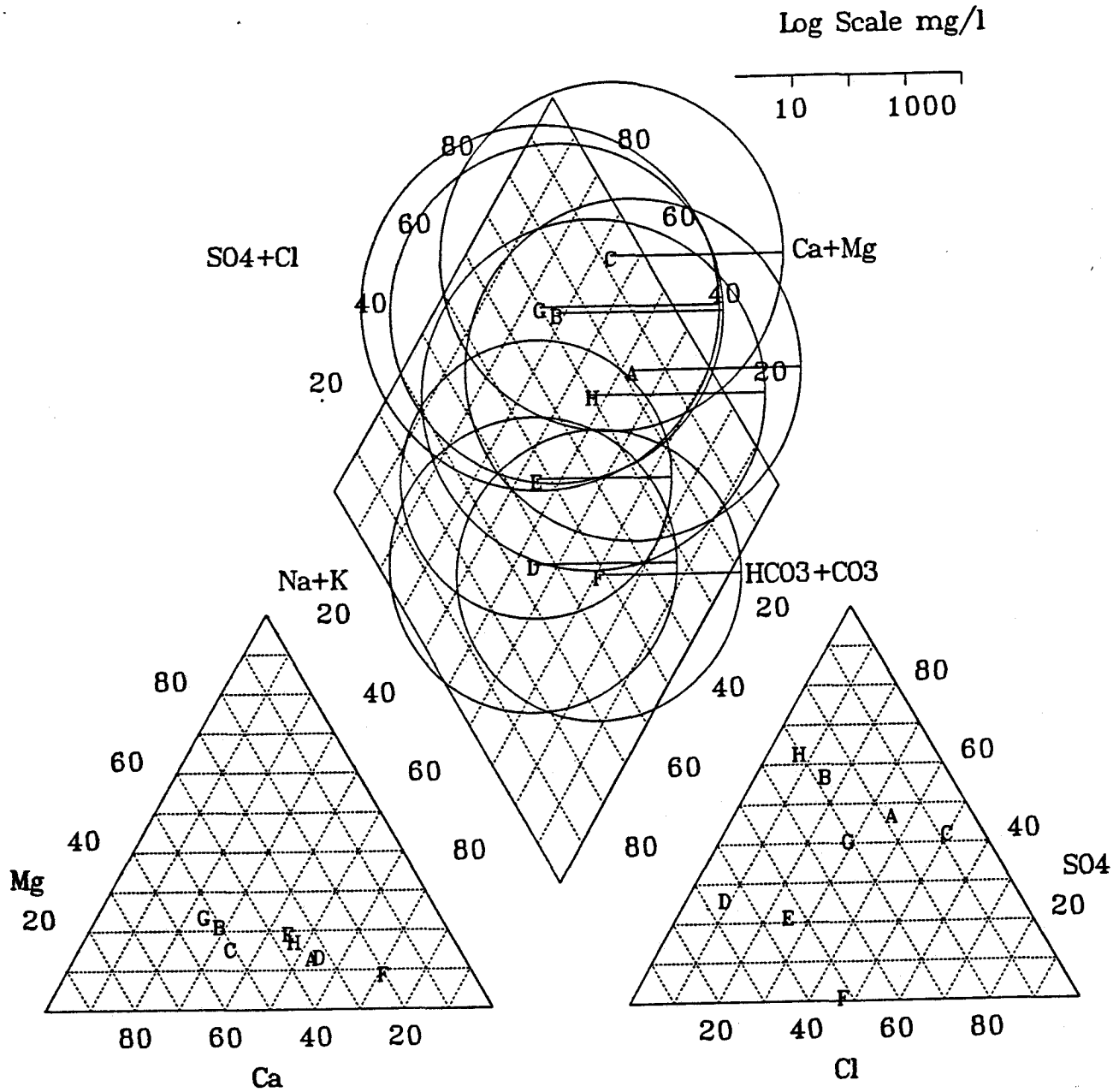
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Piper Plot of Ground Water from the Upper Flow System at OU1

Figure 5-7

OCTOBER 1992



Log Scale

Log of total dissolved solids concentration represented by radius of circle.

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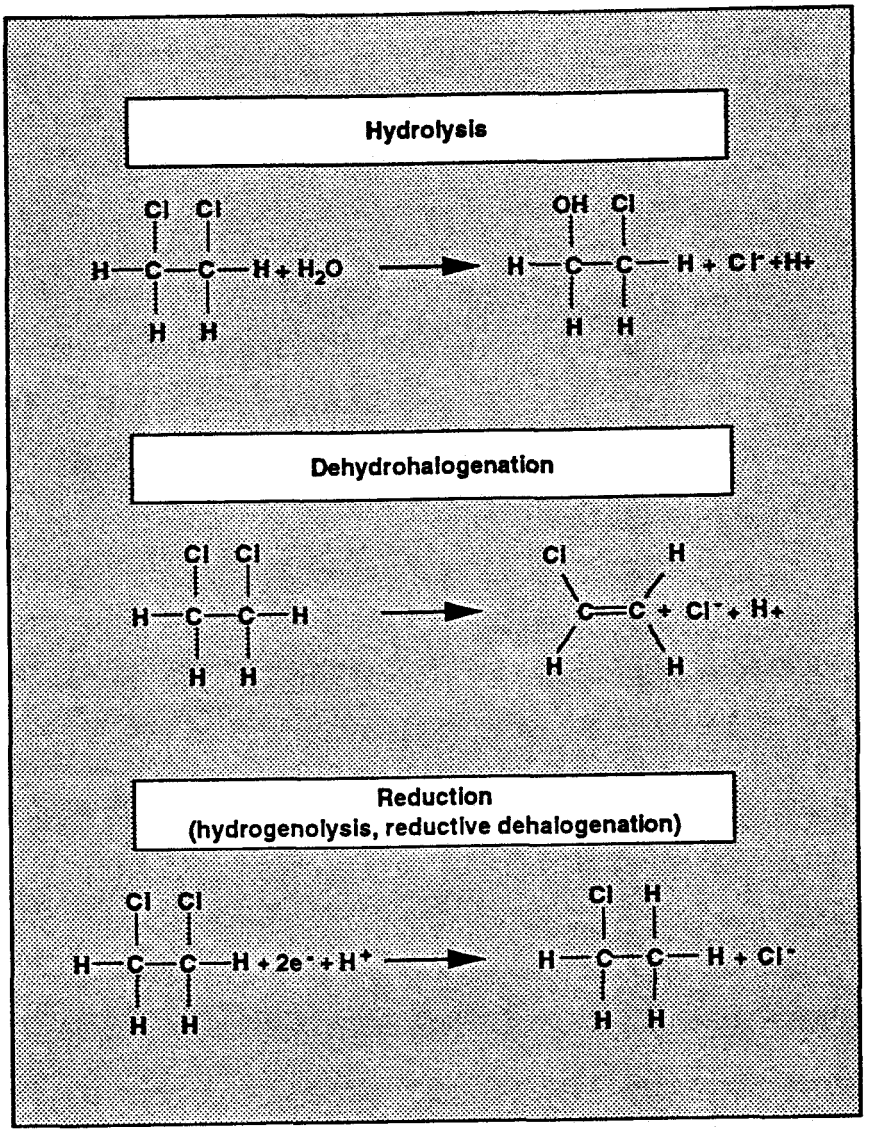
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Piper Plot of Ground Water from the Lower Flow System at OU1

Figure 5-8

OCTOBER 1992



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881 HILLSIDE AREA
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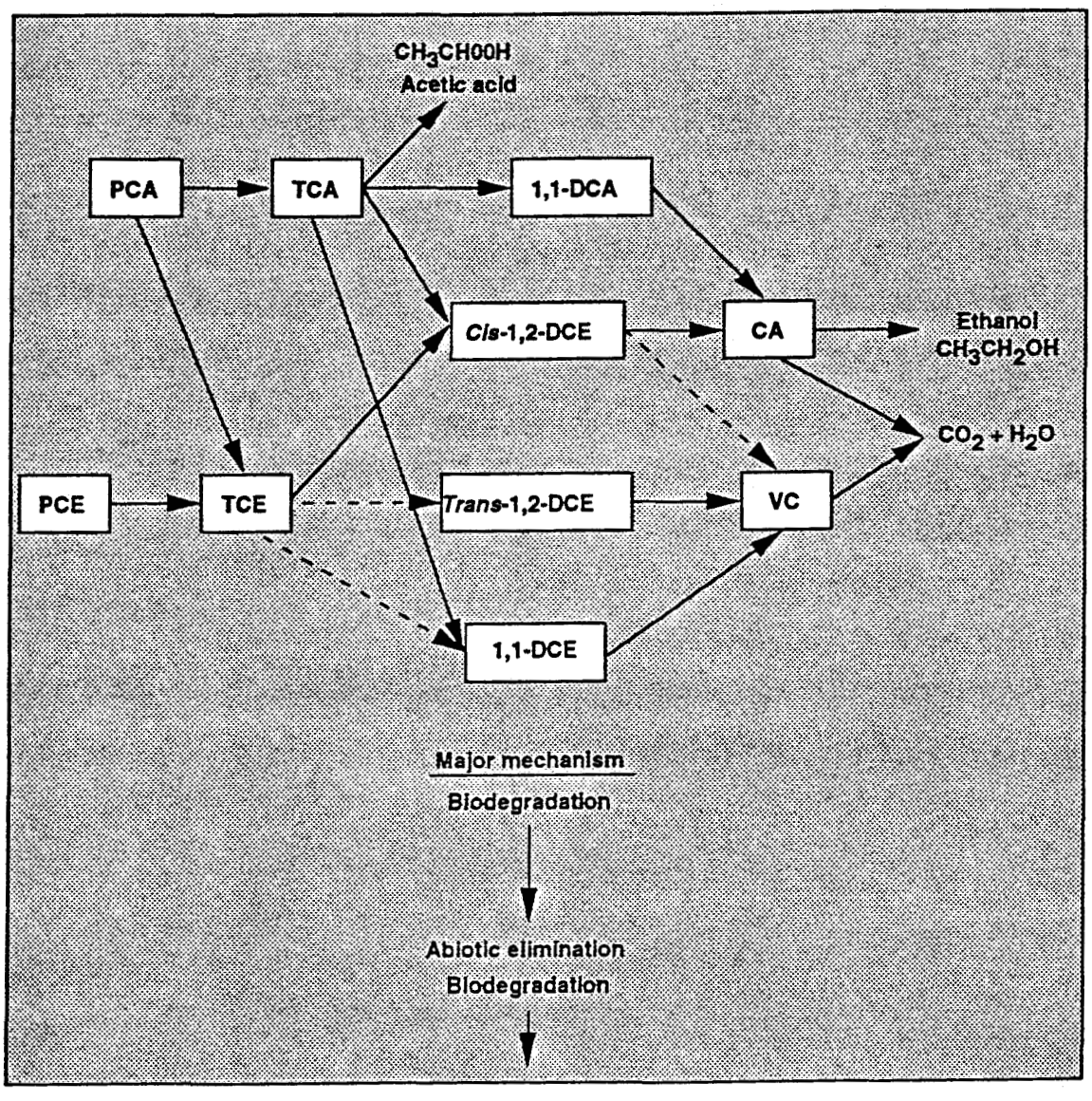
PHASE III RFI/RI REPORT

Anaerobic Dehalogenation Reactions for Chlorinated Organics

Figure 5-9

OCTOBER 1992



Explanation

- - - - ► Minor pathway

Cis-1,2-DCE generated at approximately 30 times the concentration of trans-1,2-DCE and by a factor of 25:1

PCA = Tetrachlorethane
1,1,1-TC A = 1,1,1-Triochlorethane
1,1-DCA = 1,1-Dichlorethane
Cis-1,2-DCE = *Cis*-1,2-Dichlorethene
CA = Chloroethane
PCE = Tetrachlorethene
TCE = Trichloroethene
Trans-1,2-DCE = *Trans*-1,1-Dichlorethene
VC = Vinyl chloride
1,1-DCE = 1,1-Dichlorethene

Modified after Davis and Olsen 1990.

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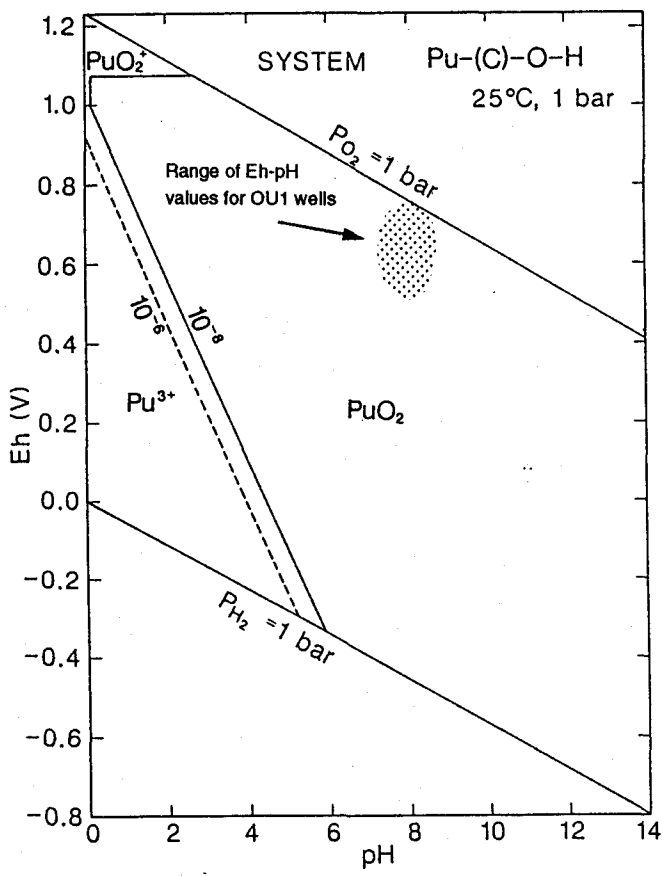
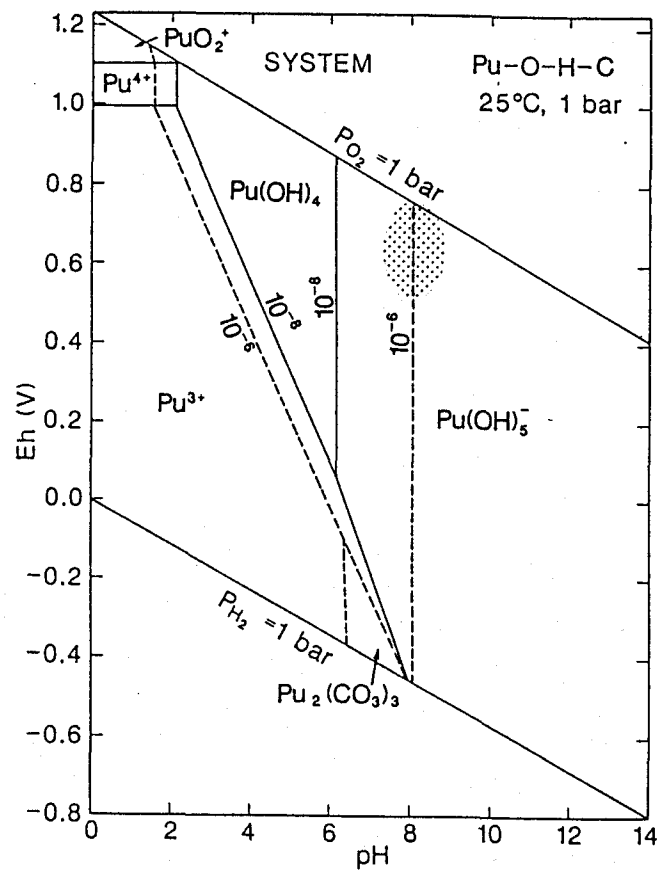
Transformations of Chlorinated Aliphatic Hydrocarbons

Figure 5-10

OCTOBER 1992



a. Pu-O-H



b. Pu-C-O-H

Note

Assumed activities for dissolved species are:

Pu = 10^{-8}

C = 10^{-3}

Source: Brookins 1988.

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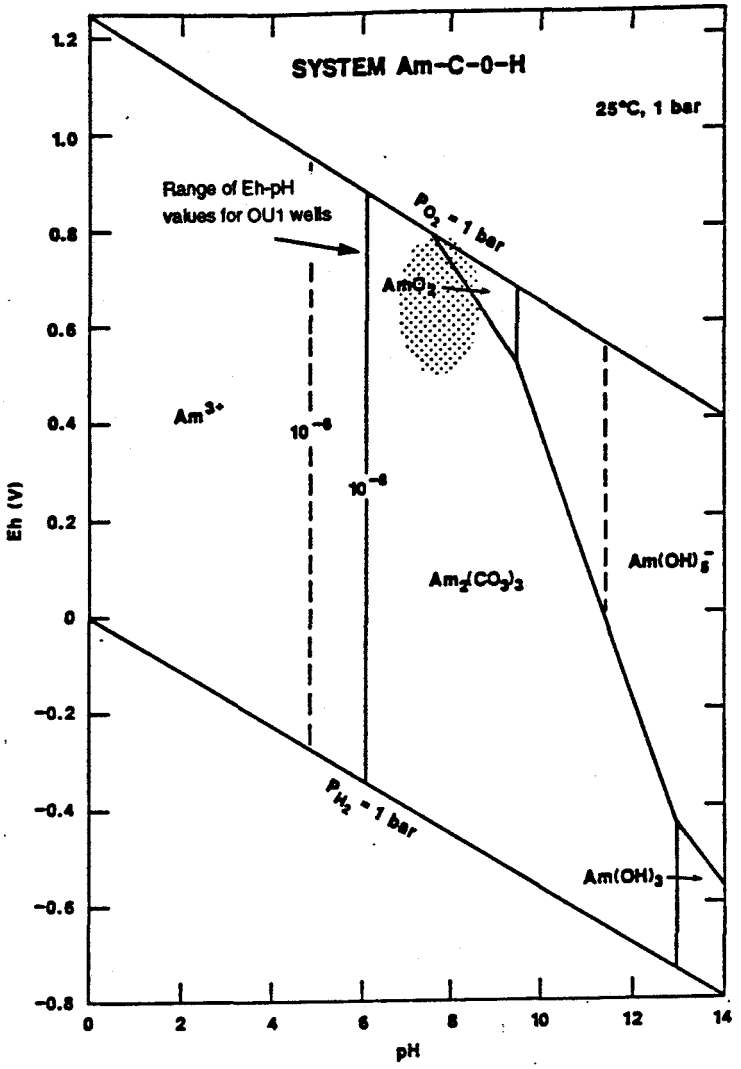
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Eh-pH Diagrams for Plutonium for the Systems a. Pu-O-H *and* b. Pu-C-O-H

Figures 5-11a *and* 5-11b

OCTOBER 1992



Note

Assumed activities for dissolved species are:

Am $= 10^{-6, -8}$

C $= 10^{-3}$

Source: Brookins 1988.

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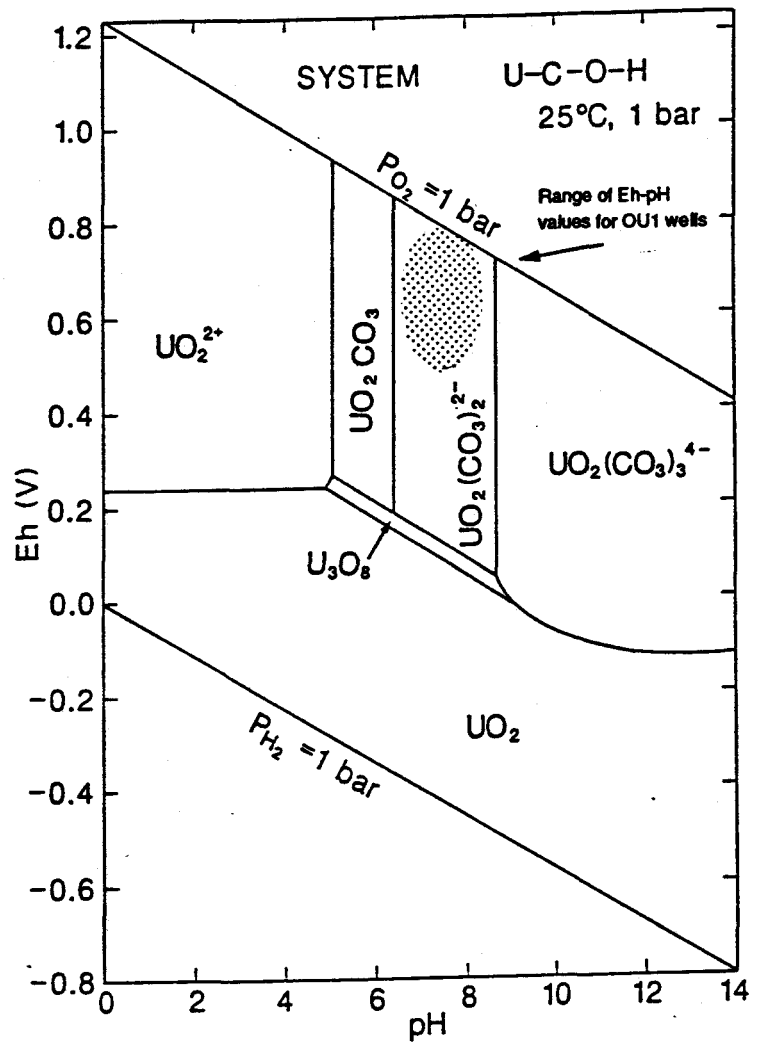
PHASE III RFI/RI REPORT

Eh-pH Diagram for Americium for the System Am-C-O-H

Figure 5-12

OCTOBER 1992



Note

Assumed activities for dissolved species are:

U = $10^{-8, -6}$

C = 10^{-3}

Source: Brookins 1988.

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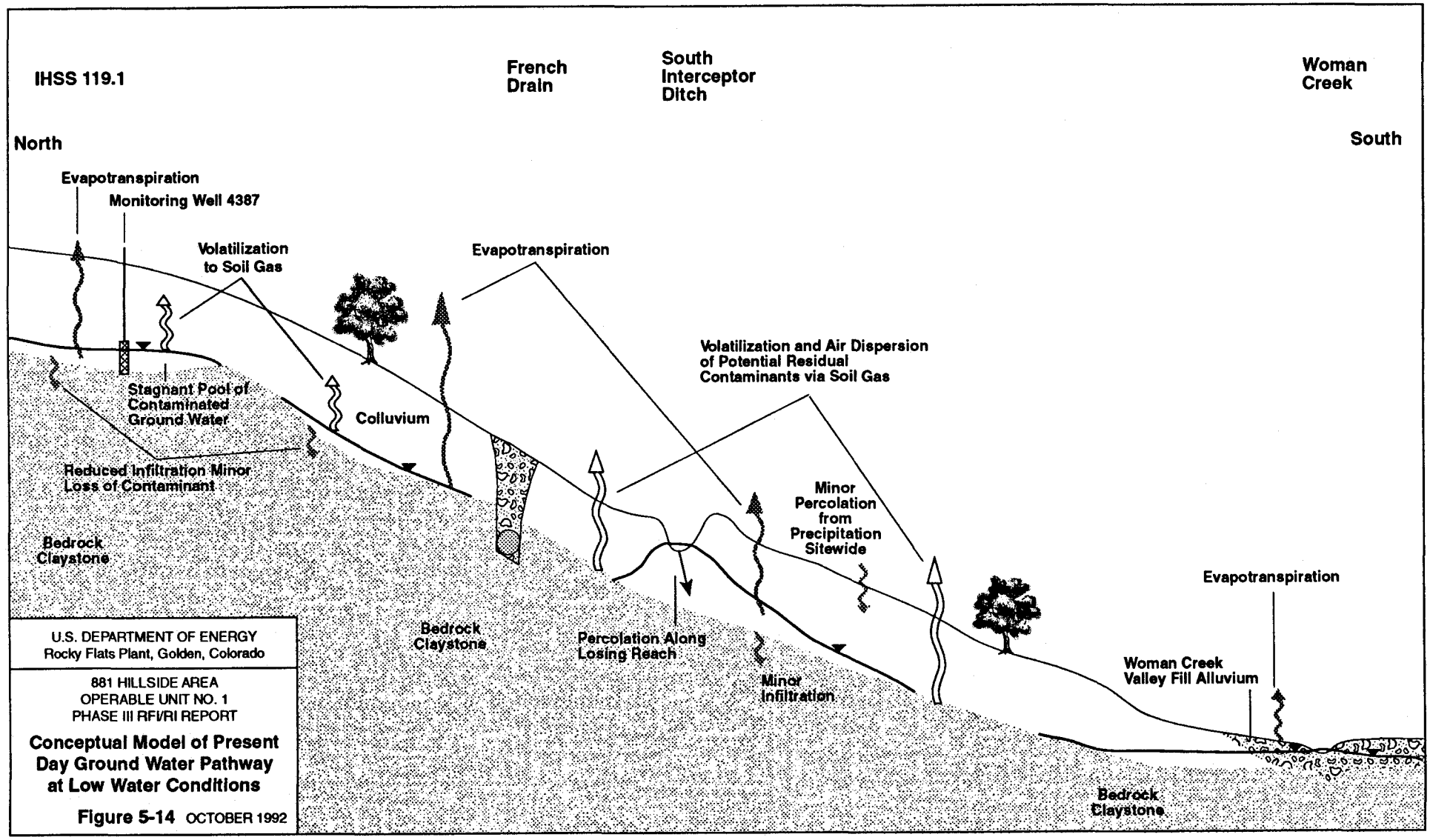
PHASE III RFI/RI REPORT

Eh-pH Diagram for Uranium for the System U-C-O-H

Figure 5-13

OCTOBER 1992

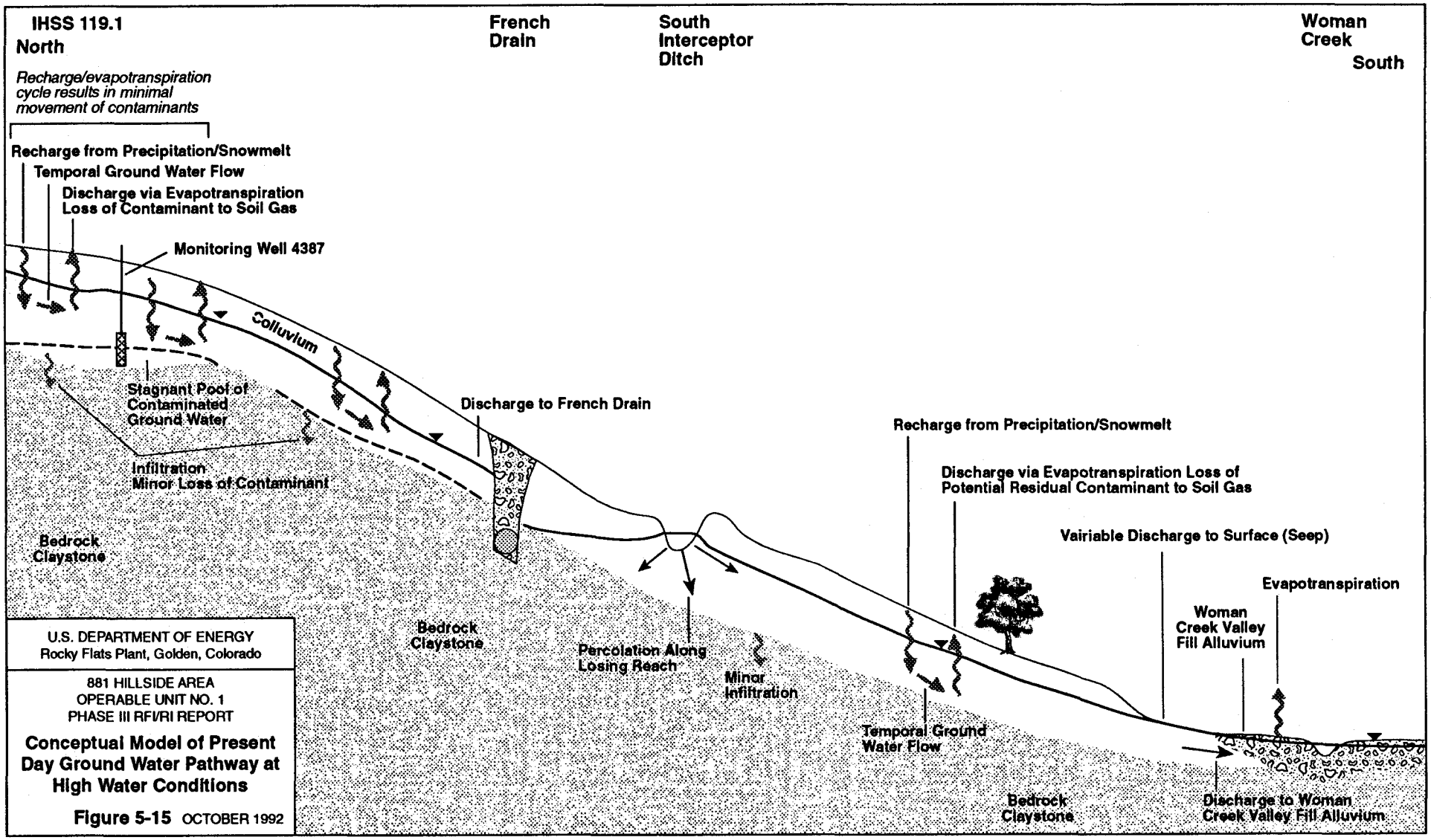


U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Conceptual Model of Present Day Ground Water Pathway at Low Water Conditions

Figure 5-14 OCTOBER 1992



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Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Conceptual Model of Present Day Ground Water Pathway at High Water Conditions

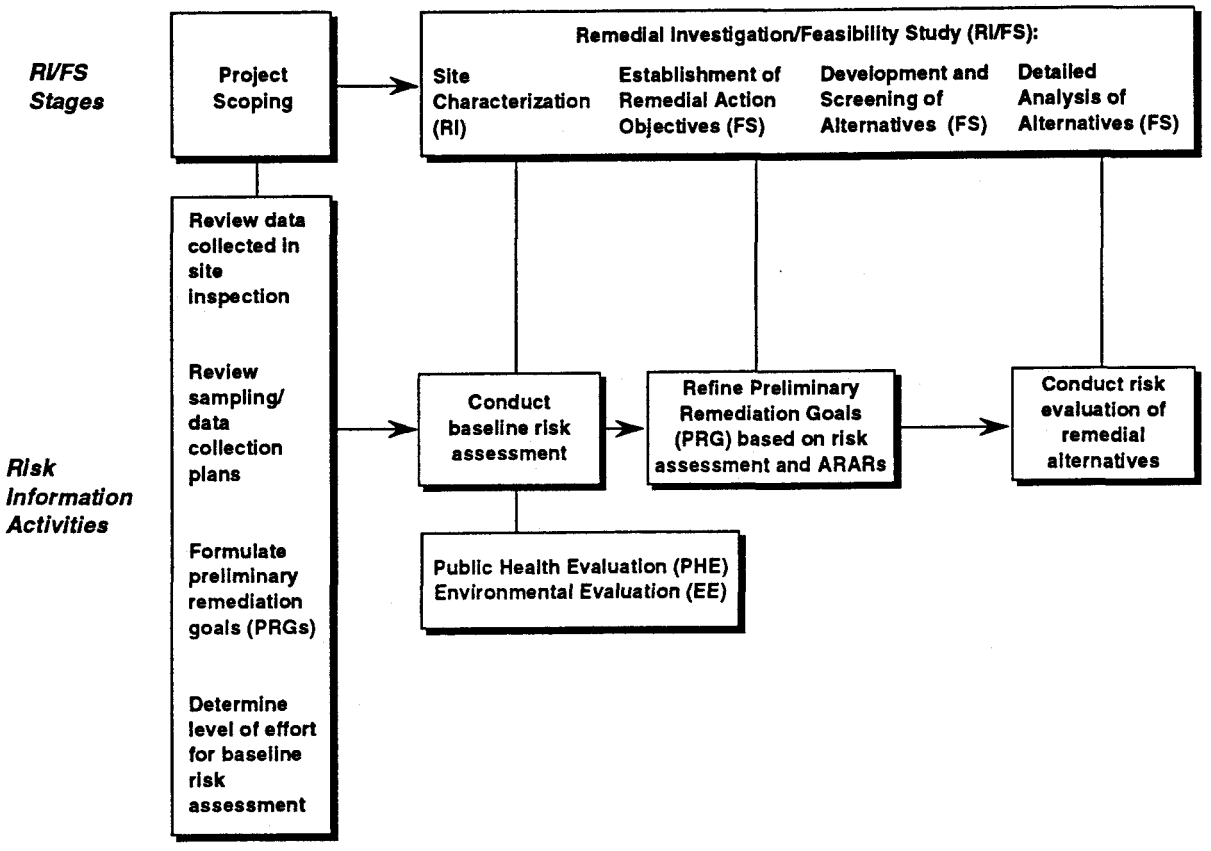
Figure 5-15 OCTOBER 1992

Section 6.0 · Figures

Baseline Risk Assessment

Phase III RFI/RI Report

U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881
1 OU1 OU1
side 881 Hill
U1 OU1 OU
881 Hillside
OU1 OU1 O
Hillside 881



After EPA 1989

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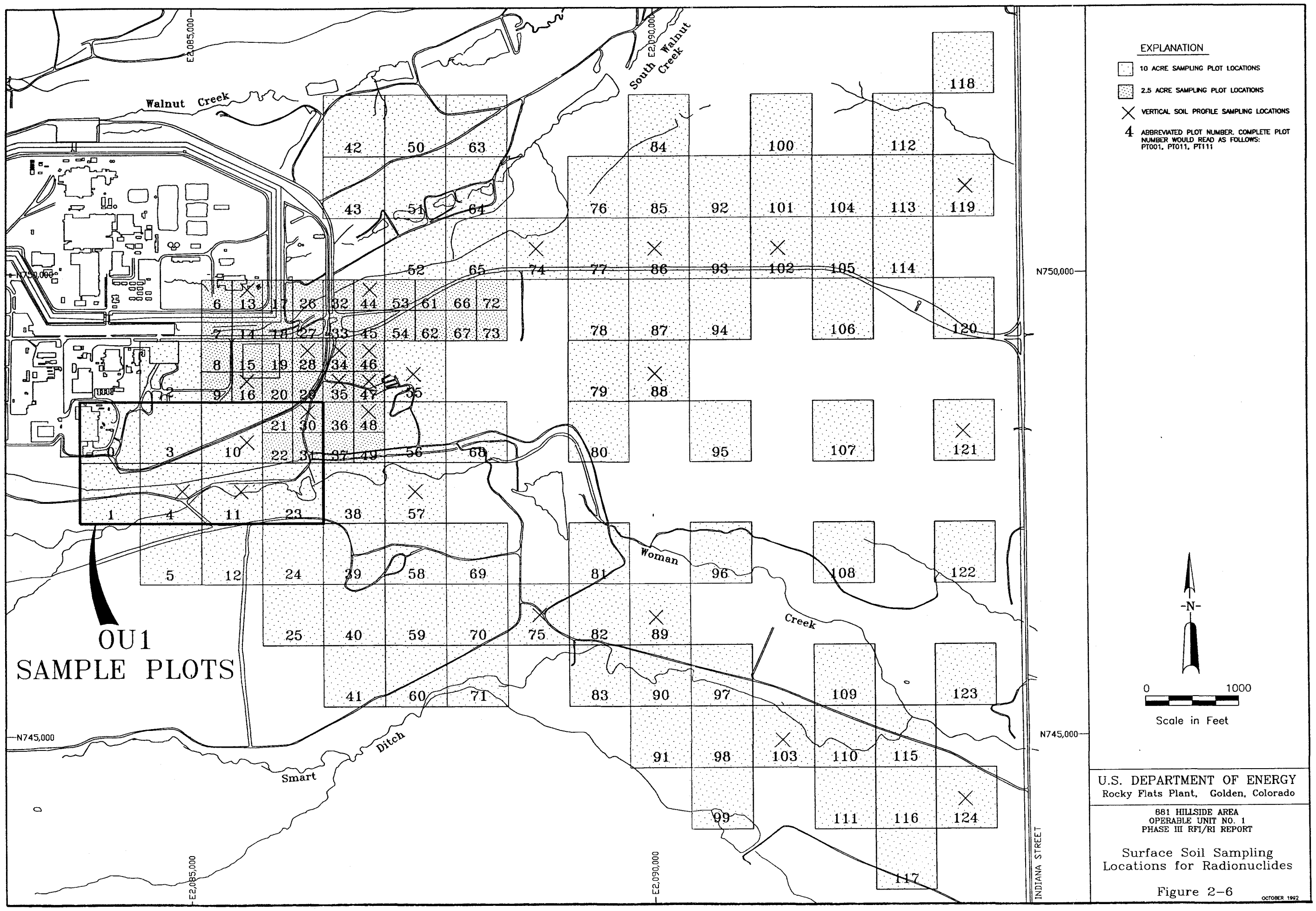
Rocky Flats Plant, Golden, Colorado

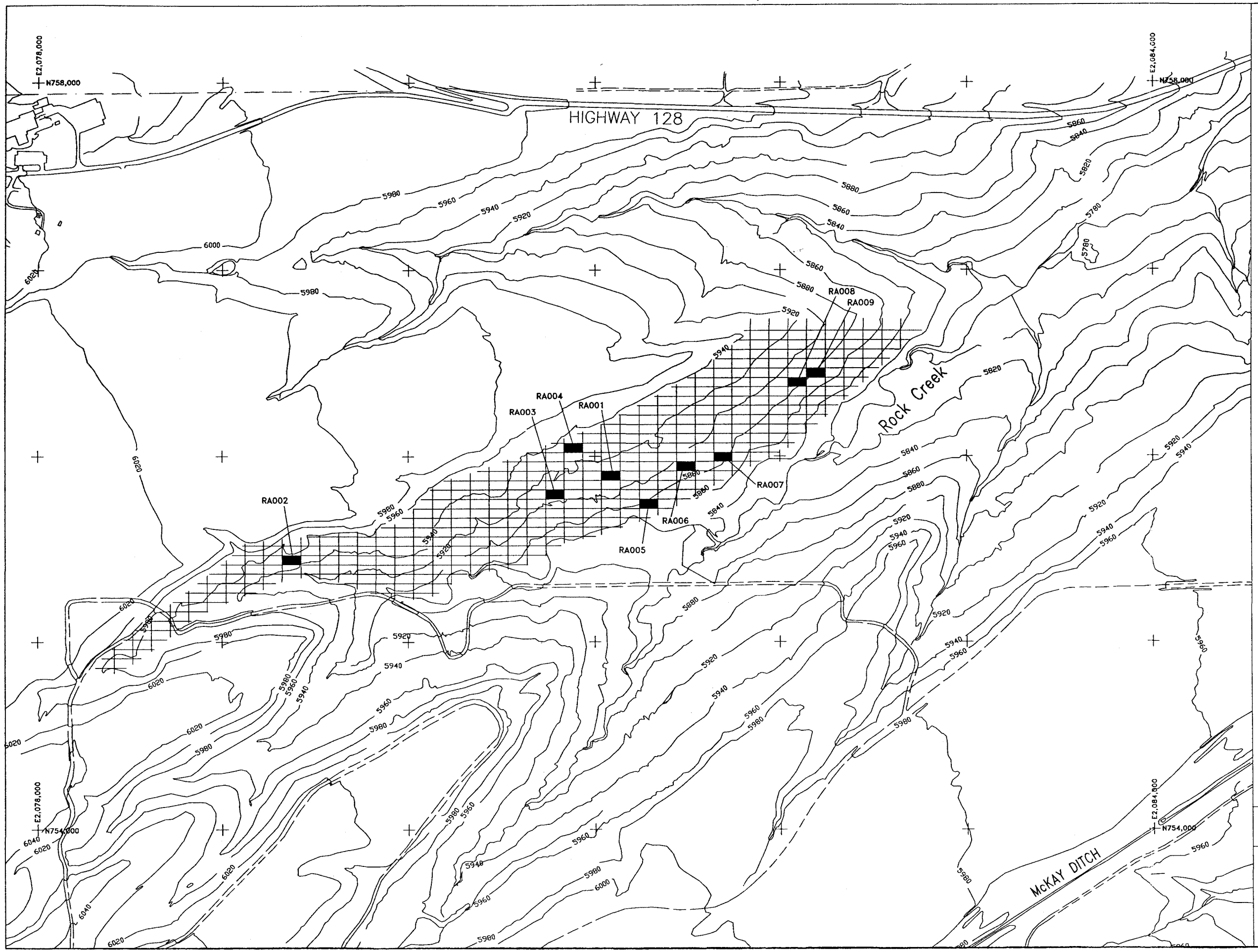
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Risk Information Activities in the RI/FS Process

Figure 6-1

OCTOBER 1992


OU1
SAMPLE PLOTS
Walnut Creek
South Walnut Creek
Woman Creek
Smart Ditch
INDIANA STREET
N750,000
N745,000
E2,085,000
E2,090,000
EXPLANATION
10 ACRE SAMPLING PLOT LOCATIONS
2.5 ACRE SAMPLING PLOT LOCATIONS
VERTICAL SOIL PROFILE SAMPLING LOCATIONS
4 ABBREVIATED PLOT NUMBER. COMPLETE PLOT NUMBER WOULD READ AS FOLLOWS: PT001, PT011, PT111
-N-
0
1000
Scale in Feet
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Surface Soil Sampling
Locations for Radionuclides
Figure 2-6
OCTOBER 1992



EXPLANATION

SURFICIAL SOIL POLYGON (100' x 50')

BACKGROUND SURFACE SOIL SAMPLING LOCATIONS

RA009 SAMPLE NUMBER

-N-

0 500

SCALE: 1"=500'

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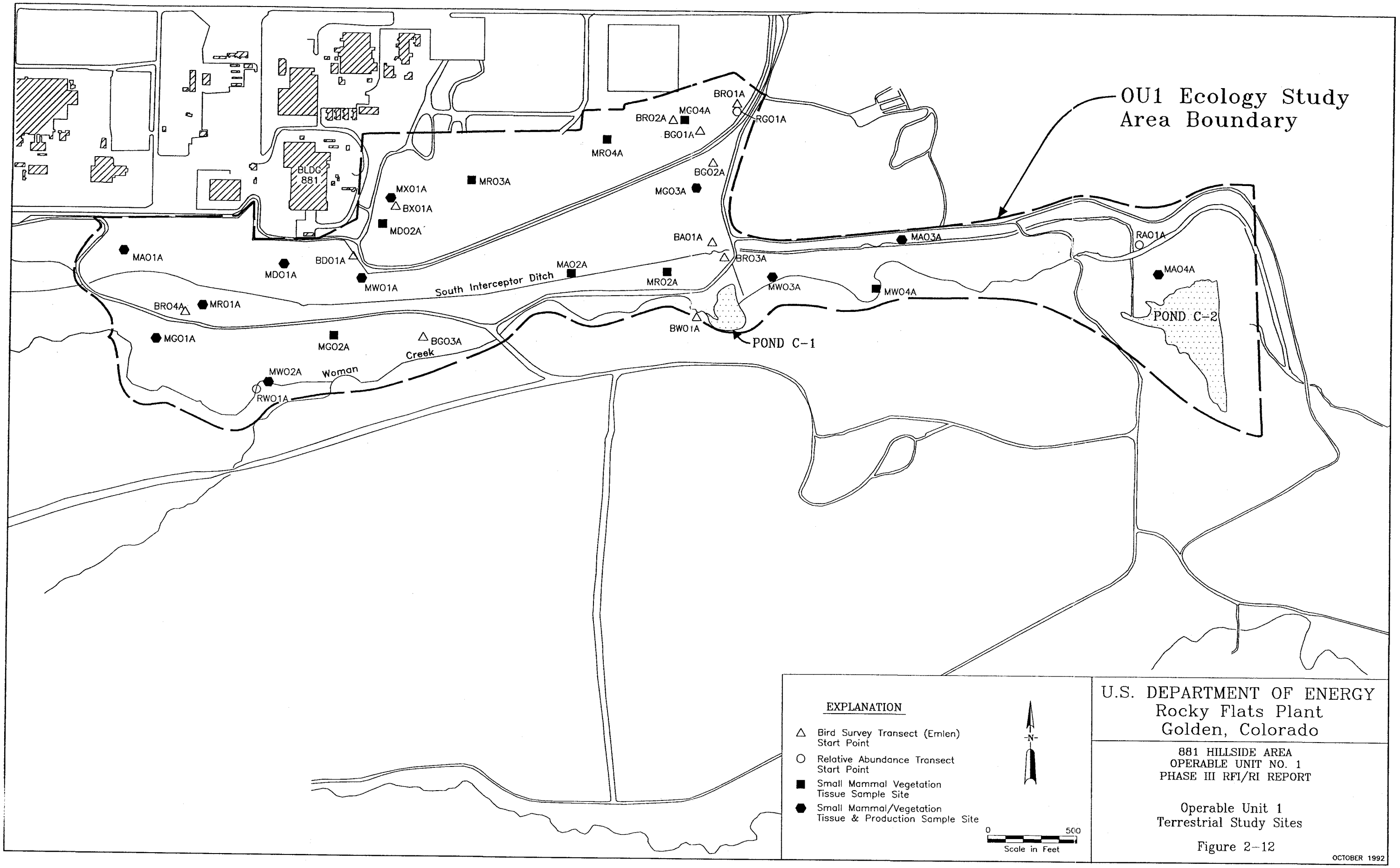
Rocky Flats Plant Golden, Colorado

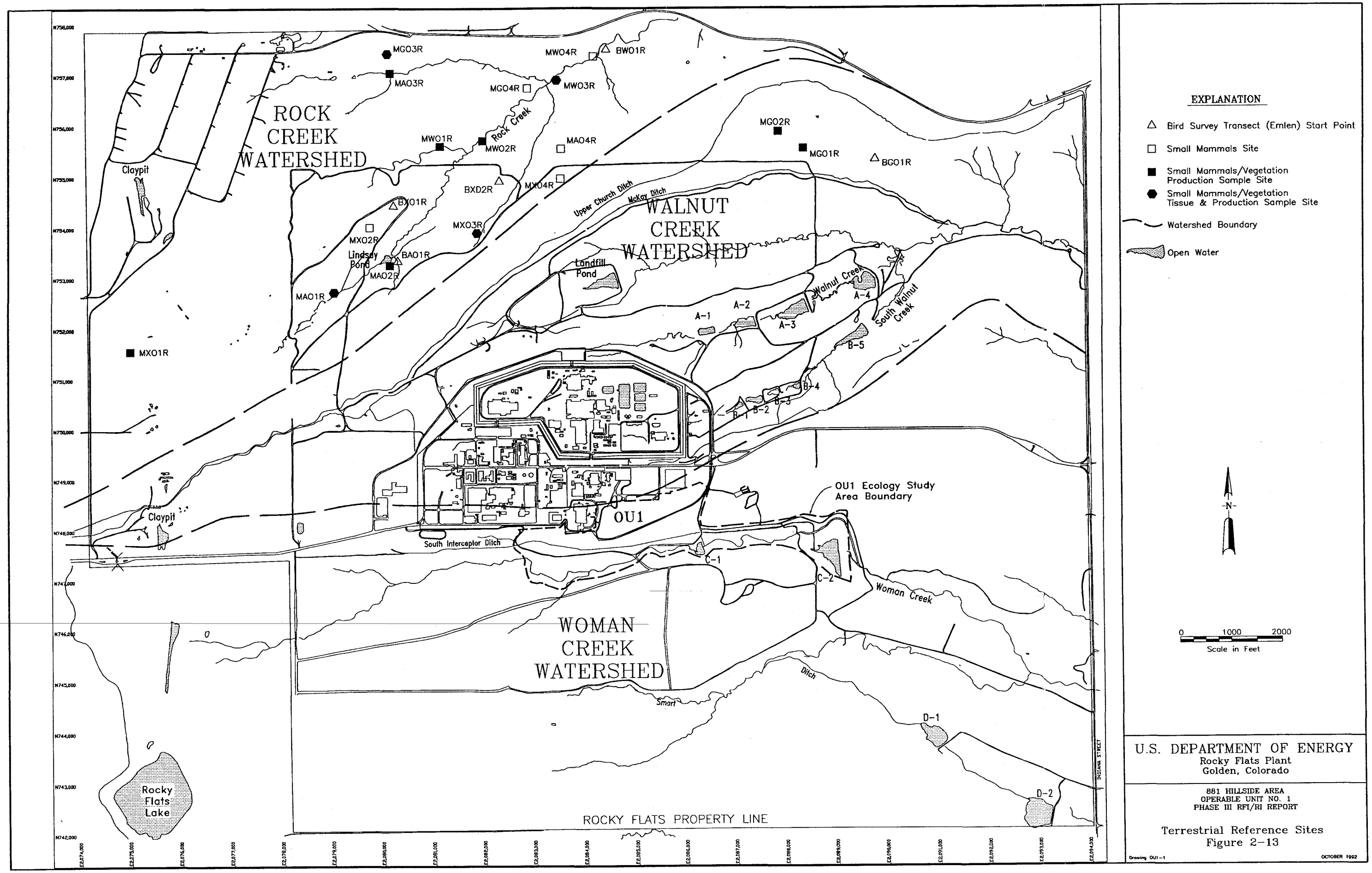
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Background Surface Soil Sample Locations in the Rock Creek Area

Figure 2-8

OCTOBER 1992


OU1 Ecology Study Area Boundary
BLDG 881
MX01A
BX01A
MD02A
MR03A
MR04A
BR01A
RG01A
BR02A
MG04A
BG01A
BG02A
MG03A
BA01A
BR03A
MA03A
RA01A
MA04A
POND C-2
POND C-1
MA01A
MD01A
BD01A
MW01A
South Interceptor Ditch
MA02A
MR02A
MW03A
MW04A
BR04A
MR01A
BW01A
MG01A
MG02A
BG03A
Creek
Woman
MW02A
RW01A
EXPLANATION
Bird Survey Transect (Emlen) Start Point
Relative Abundance Transect Start Point
Small Mammal Vegetation Tissue Sample Site
Small Mammal/Vegetation Tissue & Production Sample Site
N
0
500
Scale in Feet
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Operable Unit 1
Terrestrial Study Sites
Figure 2-12
OCTOBER 1992



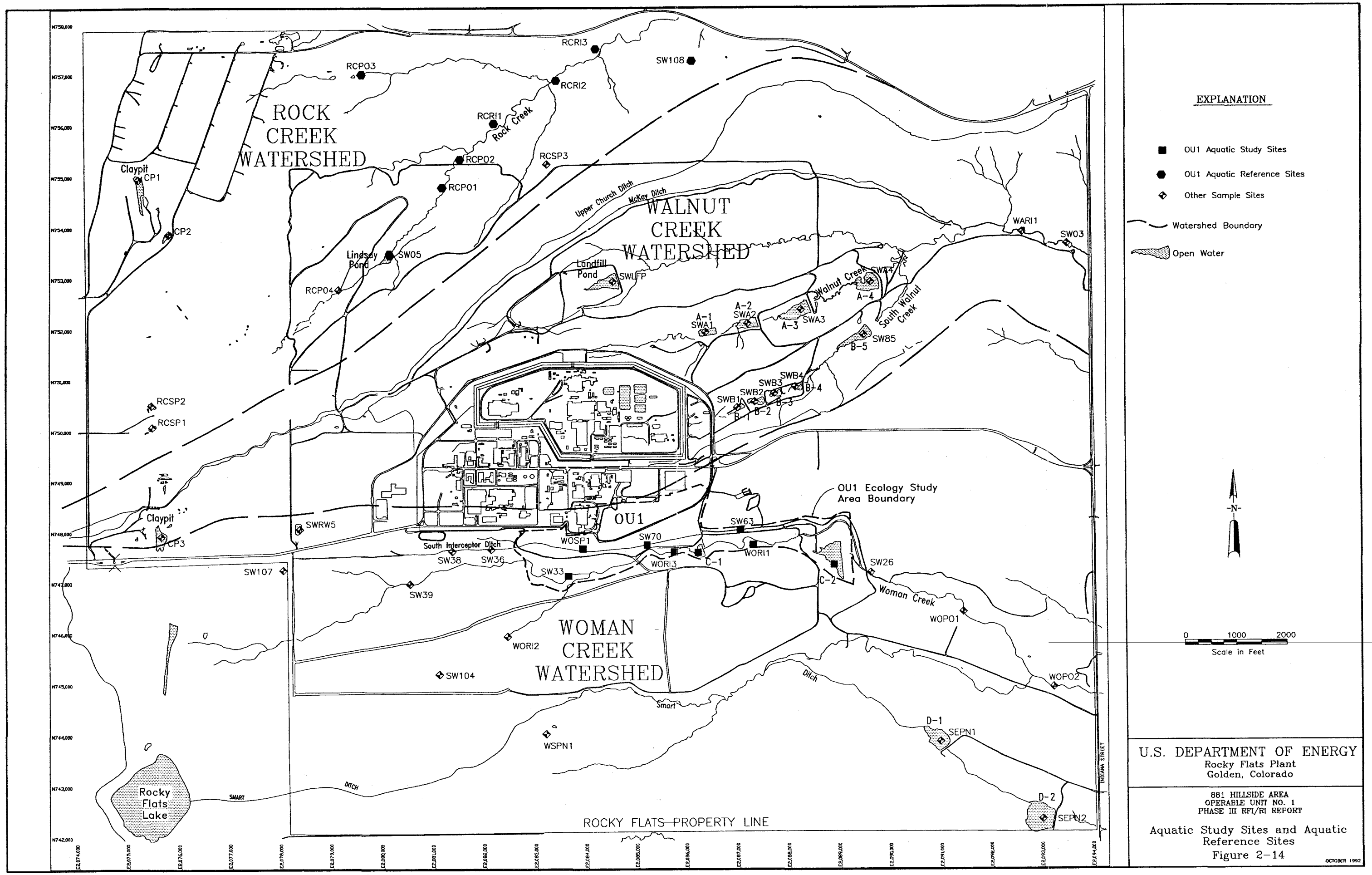
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Terrestrial Reference Sites
Figure 2-13

Drawing OU1-1

OCTOBER 1992



EXPLANATION

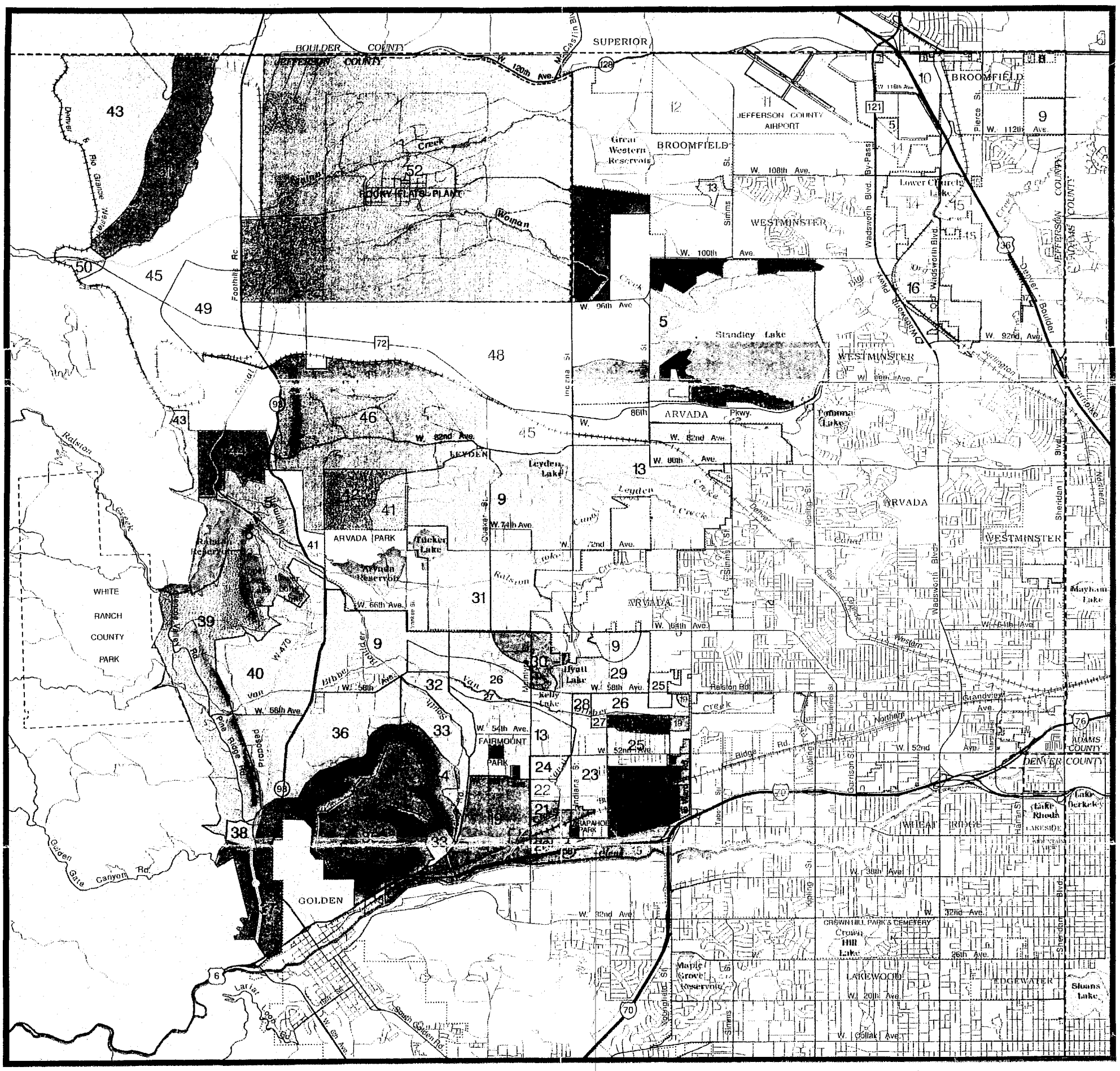
- OU1 Aquatic Study Sites
- OU1 Aquatic Reference Sites
- Other Sample Sites
- Watershed Boundary
- Open Water

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Aquatic Study Sites and Aquatic Reference Sites
Figure 2-14

OCTOBER 1992



NORTH PLAINS COMMUNITY PLAN STUDY AREA SUMMARY MAP

AREA	TYPE OF LAND USE
1	Cemetery
2	Existing Parks and Recreation Areas, Schools
5	Open Space, Parks and Recreation Areas, Agriculture, Ranching, and Residential up to 1 du/10 ac
6	Residential up to 4 du/ac
7	*Light Industrial*
8	Retail and Office
9	Residential up to 4 du/ac
10	Business Park, i.e., Office, Light Industrial
11	Aviation Use, Jefferson County Airport, Business Park, i.e., Office, Light Industrial
12	Business Park, i.e., Office, Light Industrial
13	Residential up to 2 du/ac
14	Business Park, i.e., Office, Light Industrial
15	Business Park, i.e., Office, Light Industrial
16	Residential up to 2.5 du/ac
17	Residential up to 10 du/ac
18	Infill Area. Retail, Office, Light Industrial
19	Infill Area. Retail, Office and Light Industrial, Residential up to 15 du/ac
20	Infill Area. Recreational Vehicle Parks, Retail, Office, Light Industrial, Residential up to 15 du/ac
21	Mixed Use Area. A balance of Office, Light Industrial, Retail, Community Facilities, Residential
22	Office
23	Residential up to 2.5 du/ac outside existing Retail, Office and Industrial areas
24	Residential up to 3 du/ac
25	Residential up to 3.5 du/ac
26	Residential up to 2.5 du/ac
27	Residential up to 2 du/ac adjacent to Van Bibber floodplain
28	Residential up to 2.2 du/ac
29	Residential up to 2.7 du/ac
30	West 64th Avenue and McIntyre Street Activity Center. Residential up to 15 du/ac, Retail, Office, Light Industrial
31	Golf Course, Open Space and Residential up to 4 du/ac, neighborhood-scale Retail and Office development of approximately 100,000 square feet north of West 64th Avenue
32	Residential up to 1.5 du/ac
33	Residential up to 1 du/ac
34	Open Space, Conservation because Geologic *Hazard Area exists*
35	Residential 1 du/5 to 35 ac, Office and limited Retail, Research and Development, Open Space and Trails
36	Residential up to 4 du/ac, Neighborhood-scale Retail and Office development up to 150,000 square feet in one quadrant of the West 58th Avenue and Colorado State Highway 93 intersection
37	Activity Center. Residential up to 10 du/ac, Light Industrial, Office, Retail, and Tourist Services
38	Residential up to 2.5 du/ac
39	Residential 1 du/5 to 35 ac
40	Residential up to 4 du/ac, Retail and Office up to a 1500 foot radius of West 64th Avenue and W-470 interchange, west of Colorado State Highway 93
41	Office, Industrial
42	Special Use Area. Office and Industrial if hazards can be mitigated
43	Residential up to 1 du/2 ac
44	Mixed Use. Office, Light Industrial, Residential up to 4 du/ac
45	Office, Industrial
46	Special Use Area. Office, Industrial if hazards can be mitigated
47	Office, Light Industrial, Golf Course, and limited Residential up to 4 du/ac
48	Office, Industrial; Retail approximately 1500 feet around the W-470 and Indiana Street and W-470 and West 104th Avenue interchanges
49	Retail, Office
50	Equestrian center, Residential 1 du/2 ac
51	Mixed Use Area. Residential up to 1 du/2 ac, Office, Light Industrial
52	Special Use Area. Rocky Flats Nuclear Facility and buffer zone

Enclaves: Residential up to 4 du/ac or existing zoning, whichever is greater. If adjacent land use is non-residential, then a similar land use could be considered provided adverse impacts are mitigated

NOTES: du/ac: dwelling units per acre

Ranching and Agriculture land uses, if consistent with current zoning, are permitted anywhere in the North Plains.

Ancillary retail is allowed in all office/industrial areas unless explicitly precluded.

Refer to specific Subarea policies for conditions affecting development in areas shown on the Summary Map and legend. In addition, the General Policies Section of this plan applies.

N

Nonresidential:
Retail, or Office, or Industrial

Mixed Use:
Residential & Retail, or Office, or Industrial

Open Space & Rural Residential
1 du/5 to 35 acres

Residential up to 4 du/ac

■

Special Use

Enclaves

Sanitary Landfills | **Zoned for Mining**

BOULDER COUNTY
JEFFERSON COUNTY
SUPERIOR
W. 120th Ave.
128
McCaslin Blvd
BROOMFIELD
JEFFERSON COUNTY AIRPORT
121
Great Western Reservoir
W. 112th Ave.
W. 108th Ave.
W. 100th Ave.
W. 96th Ave.
W. 92nd Ave.
W. 88th Ave.
86th
W. 82nd Ave.
W. 80th Ave.
W. 74th Ave.
W. 72nd Ave.
W. 66th Ave.
W. 64th Ave.
W. 58th Ave.
W. 56th Ave.
W. 54th Ave.
W. 52nd Ave.
W. 38th Ave.
W. 32nd Ave.
26th Ave.
W. 20th Ave.
W. Colfax Ave.
ROCKY FLATS PLANT
Woman Creek
Foothills Rd
Rio Grande Western
Denver & Rio Grande Western
72
93
WESTMINSTER
Lower Church Lake
Wadsworth Blvd.
Wadsworth Blvd. By-Pass
Pierce St.
Simms St.
Indiana St.
Quaker St.
Kipling St.
Garrison St.
Sheridan Blvd.
Standley Lake
ARVADA
ARVADA Pkwy.
Pomona Lake
LEYDEN
Leyden Lake
Leyden Creek
Ralston Creek
Ralston Reservoir
ARVADA PARK
Tucker Lake
Arvada Reservoir
WHITE RANCH COUNTY PARK
Van Bibber Creek
W-470
Hyatt Lake
Kelly Lake
FAIRMOUNT PARK
ARAPAHOE PARK
Ralston Rd
Clear Creek
Grandview Ave.
Bldge Rd.
76
ADAMS COUNTY
DENVER COUNTY
70
Lake Rhoda
Lake Berkeley
WHEAT RIDGE
LAKESIDE
Golden Gate Canyon Rd.
Pine Ridge Rd
Proposed
GOLDEN
6
Lariat Loop
South Golden Rd
Maple Grove Reservoir
CROWN HILL PARK & CEMETERY
Crown Hill Lake
LAKEWOOD
EDGEWATER
Sloans Lake
Mayham Lake
Northern
Turnpike
Denver Boulder
36
JEFFERSON COUNTY
ADAMS COUNTY
43
50
45
49
48
46
52
12
11
10
9
5
13
14
15
16
17
41
42
51
39
40
31
32
33
36
34
37
38
26
29
30
28
27
25
24
23
22
21
19
44

1 mile

N

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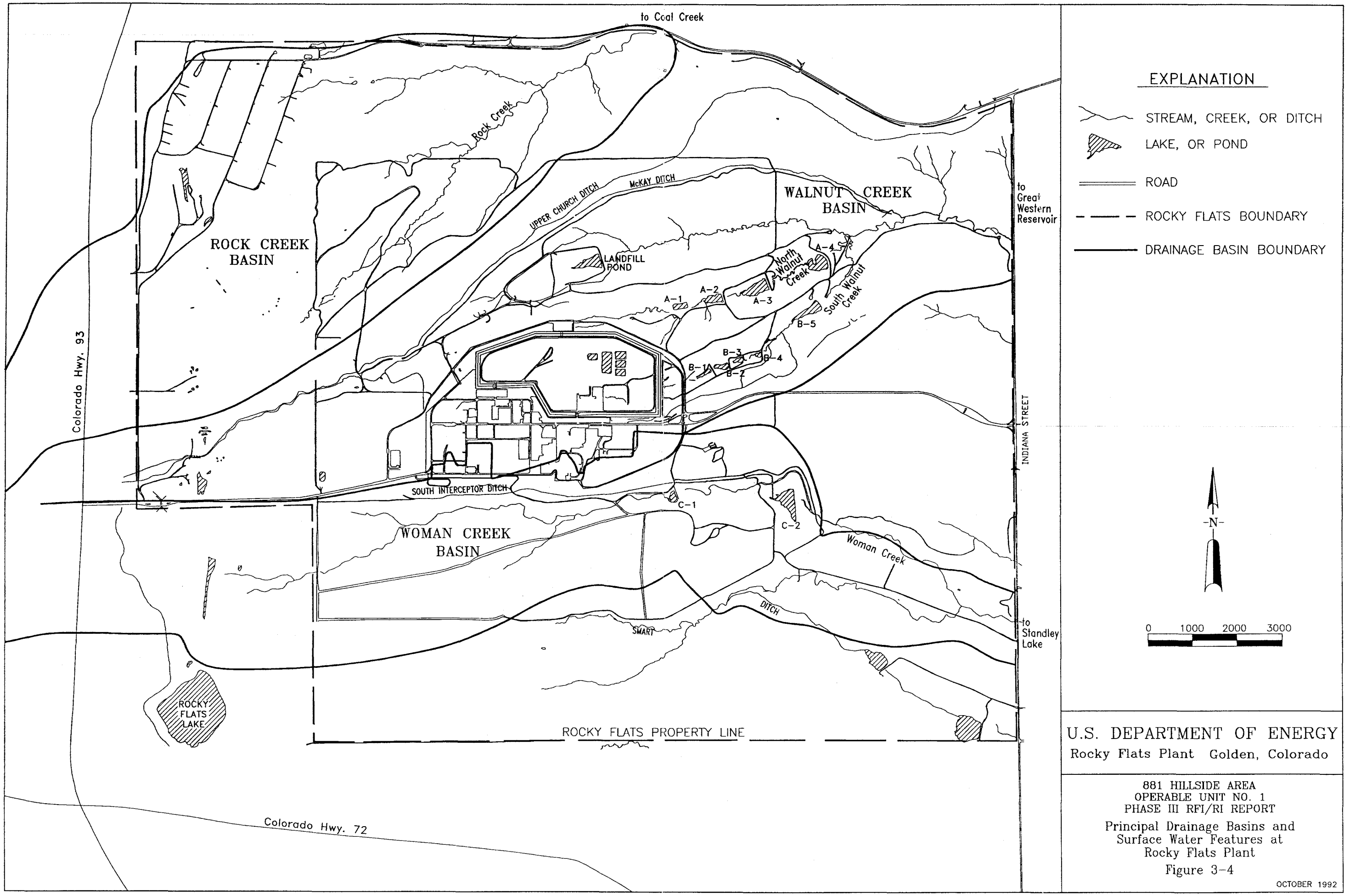
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Land Use in the Vicinity of Rocky Flats Plant

Figure 3-2 JUNE 1992



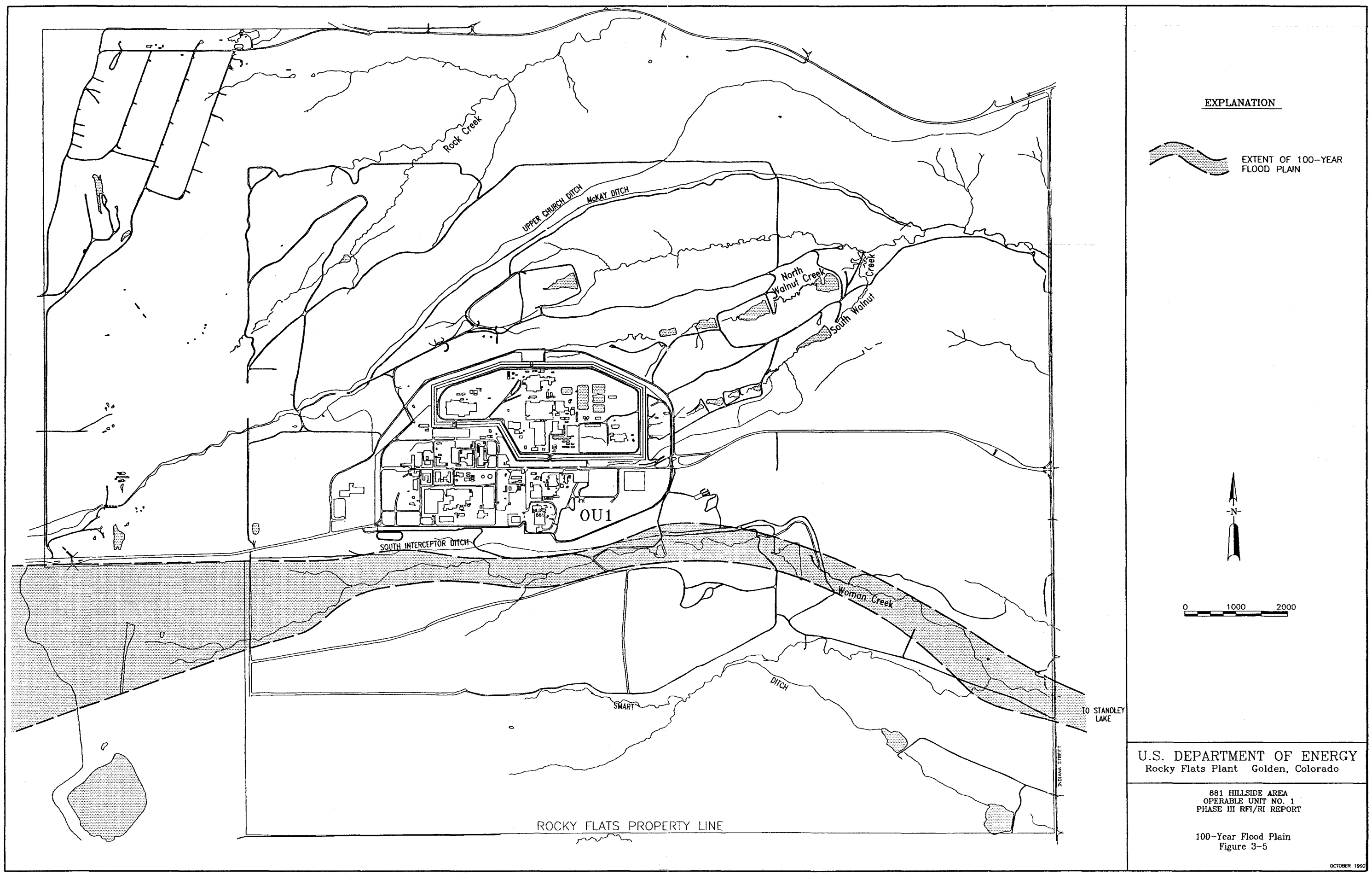
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

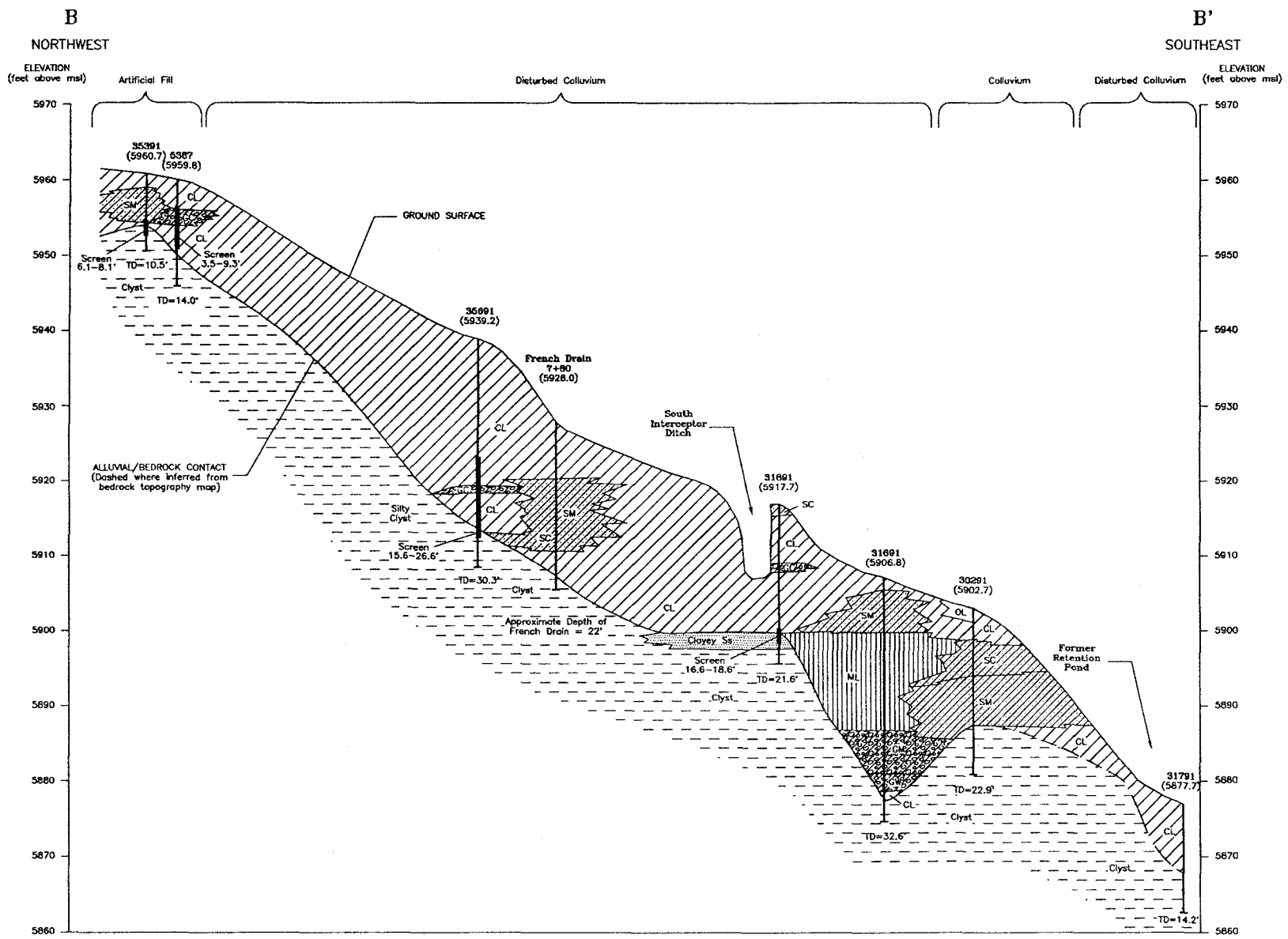
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Principal Drainage Basins and Surface Water Features at Rocky Flats Plant

Figure 3-4

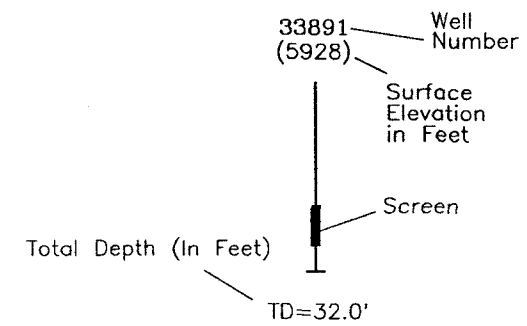
OCTOBER 1992

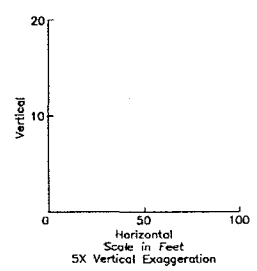

Rock Creek
UPPER CHURCH DITCH
McKAY DITCH
North Walnut Creek
South Walnut Creek
OU1
SOUTH INTERCEPTOR DITCH
Woman Creek
SMART DITCH
TO STANDLEY LAKE
INDIANA STREET
ROCKY FLATS PROPERTY LINE
EXPLANATION
EXTENT OF 100-YEAR FLOOD PLAIN
N
0 1000 2000
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
100-Year Flood Plain
Figure 3-5
OCTOBER 1992



EXPLANATION

- GM/GC – Silty or Clayey Gravels
- SM/SC – Silty or Clayey Sands
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone
- Ss – Sandstone





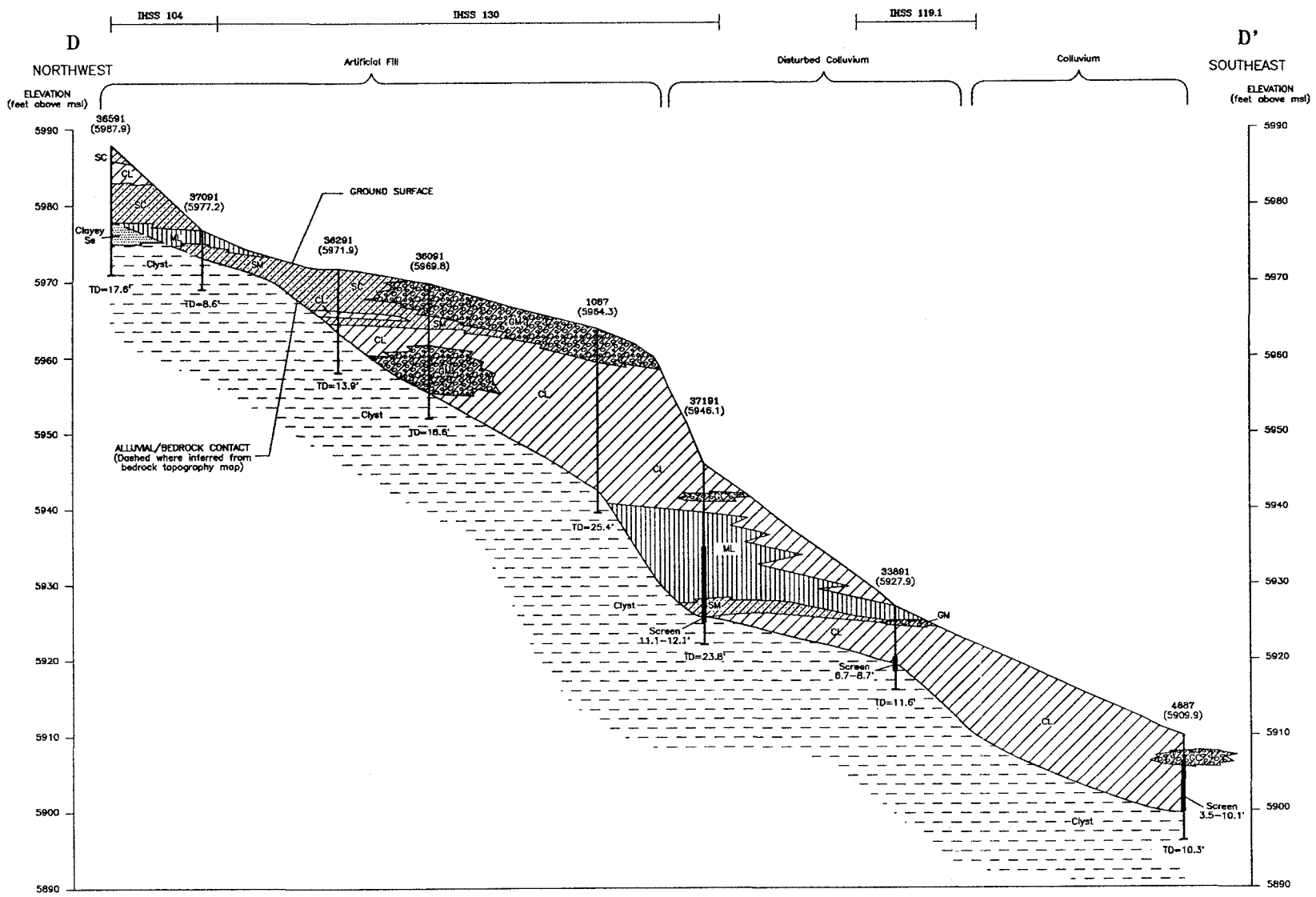
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Alluvial Cross Section
B–B'

Figure 3–12

OCTOBER 1992



EXPLANATION

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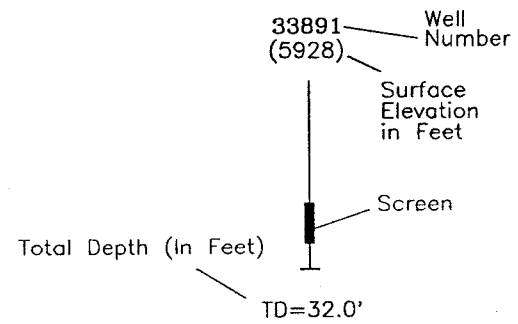
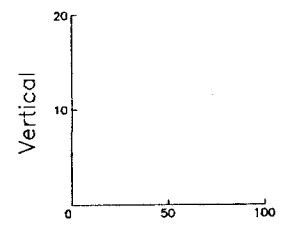
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone
- Ss – Sandstone





Horizontal
Scale in Feet
5X Vertical Exaggeration

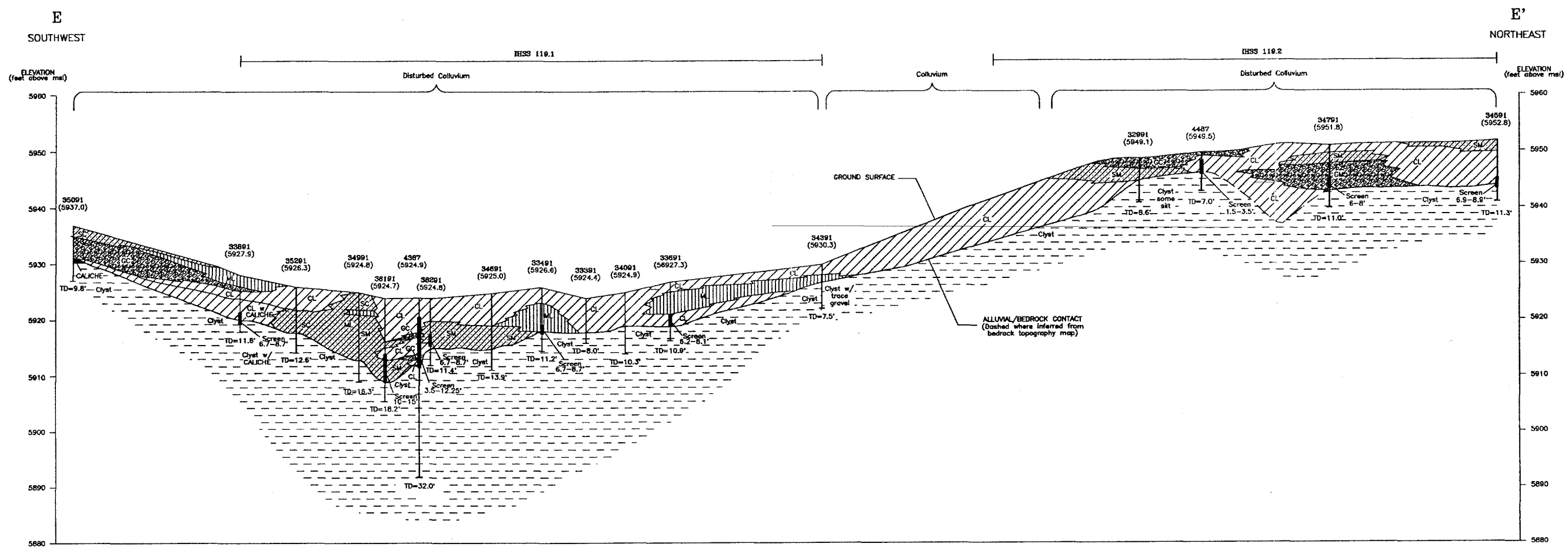
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Alluvial Cross Section
D–D'

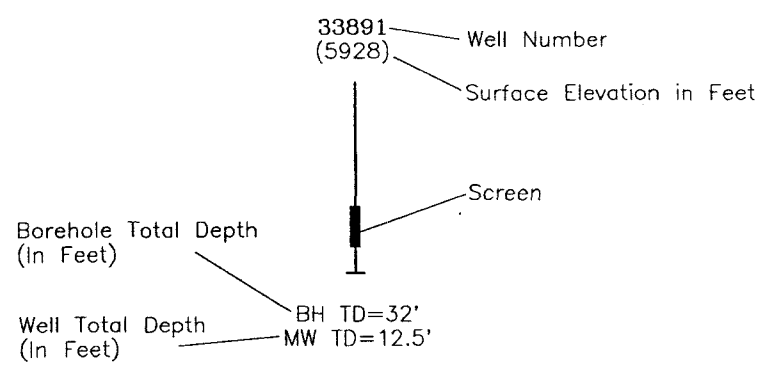
Figure 3–14

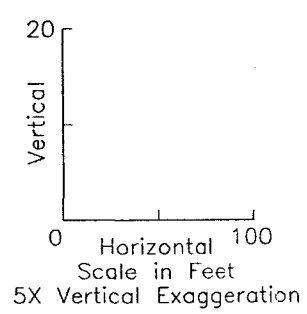
OCTOBER 1992



EXPLANATION

- GM/GC – Silty or Clayey Gravels
- SM/SC – Silty or Clayey Sands
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone





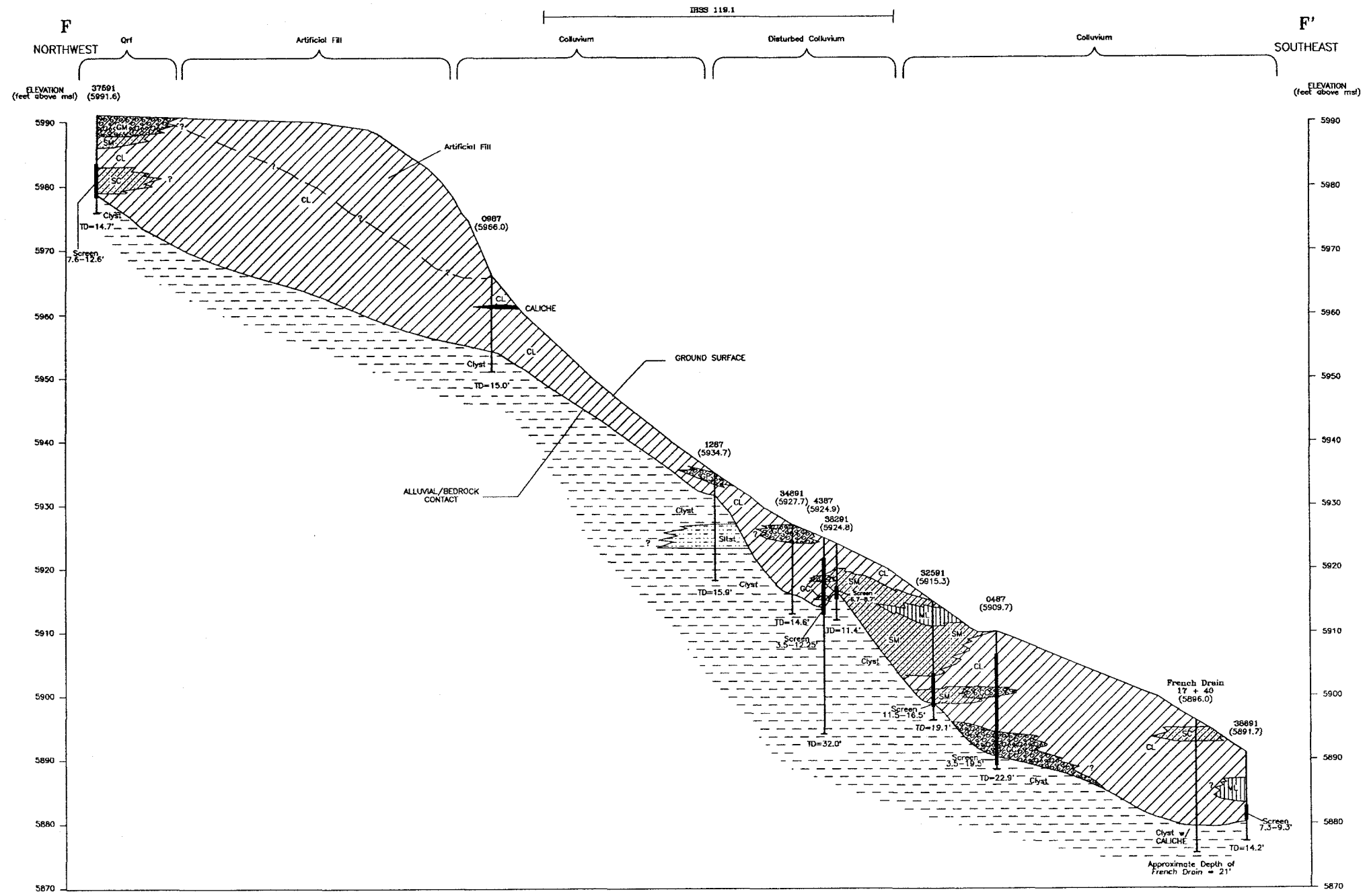
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

Alluvial Cross Section
E–E'

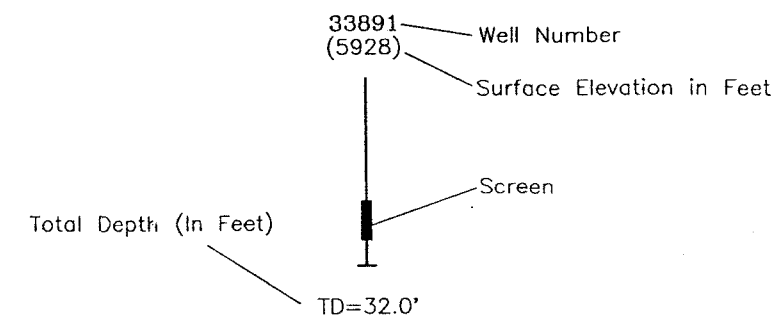
Figure 3–15

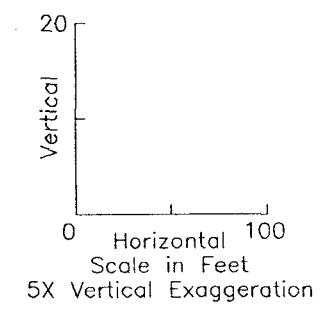
OCTOBER 1992



EXPLANATION

- GP – Poorly Graded Gravel or Gravel Sand Mixtures
- GM/GC – Silty or Clayey Gravels
- SM/SC – Silty or Clayey Sands
- ML – Inorganic Silts, Silty or Clayey Fine Grained Sands, Clayey Silts
- CL – Inorganic Clays, Gravelly, Silty or Sandy Clays, Low Plasticity
- Clyst – Claystone
- Siltst – Siltstone





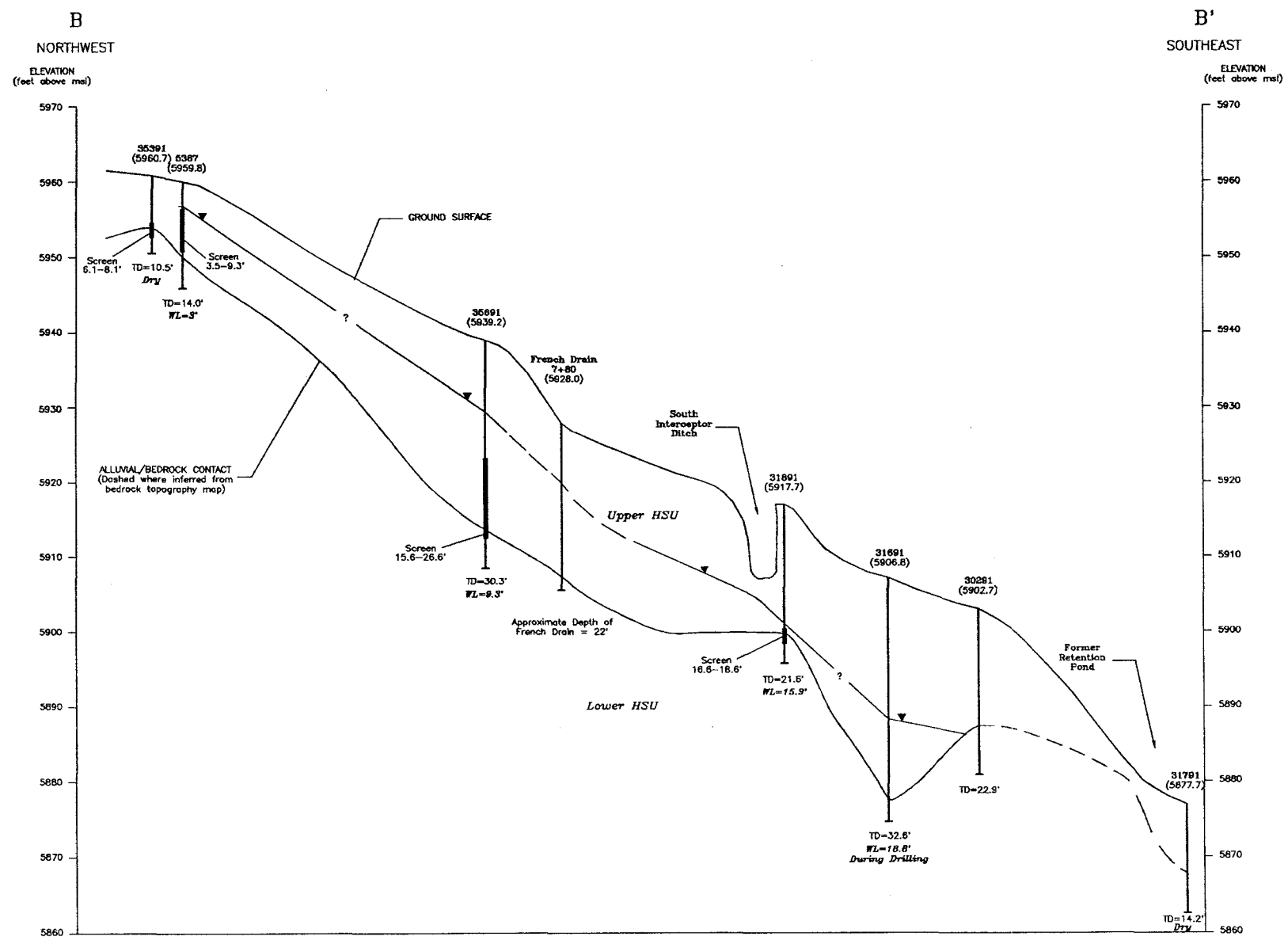
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

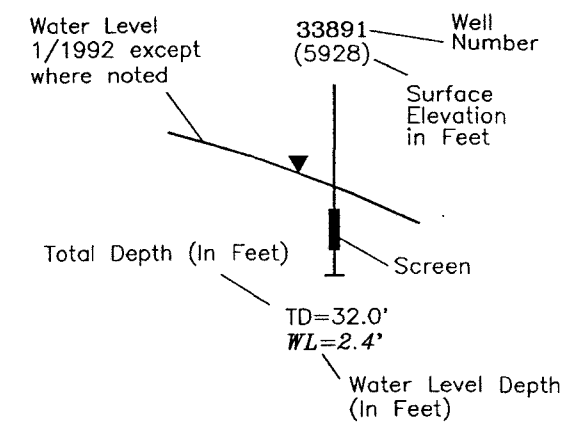
Alluvial Cross Section
F–F'

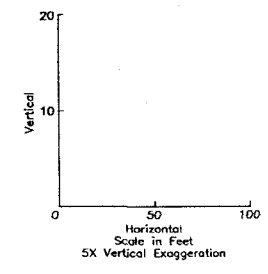
Figure 3–16

OCTOBER 1992



EXPLANATION





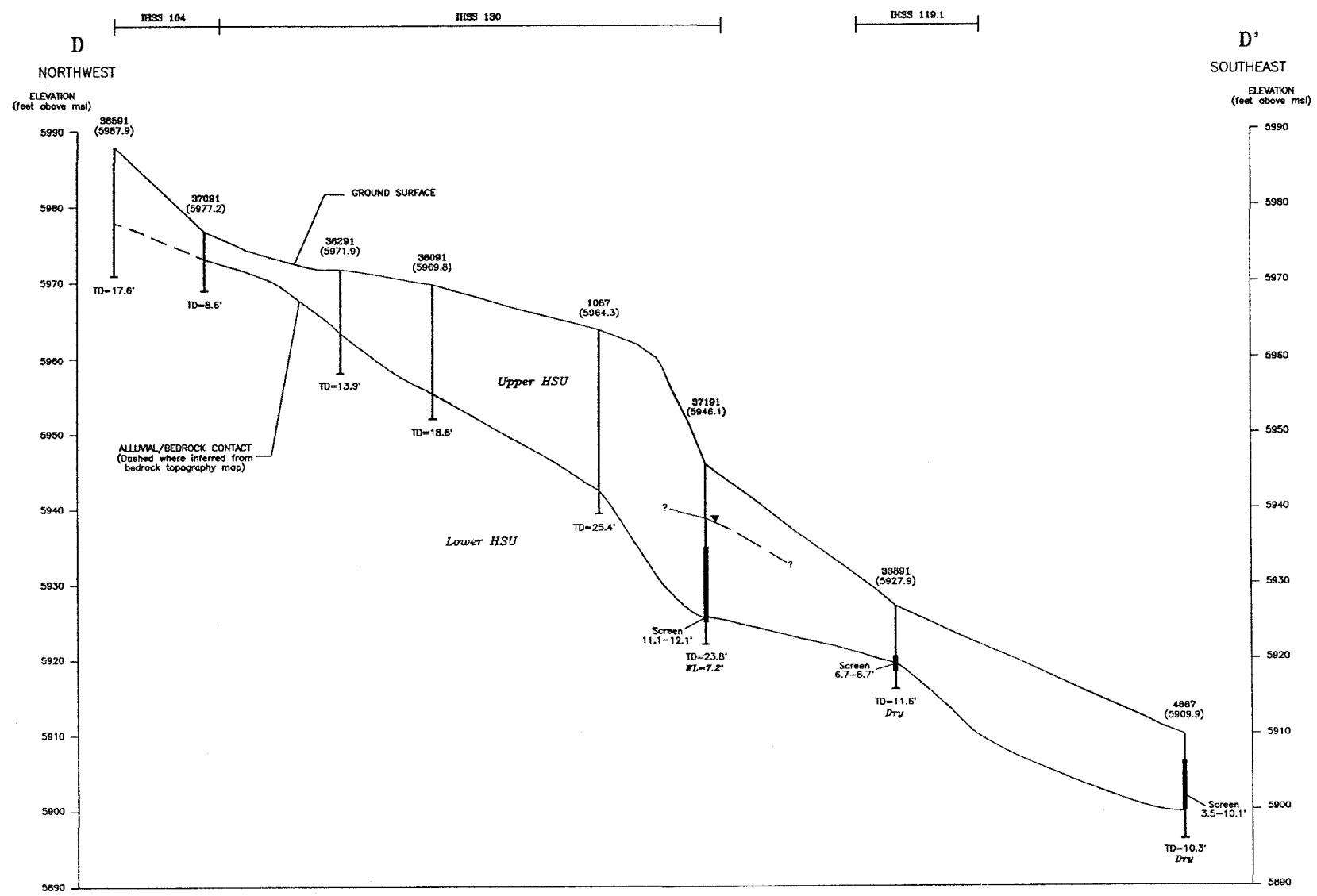
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

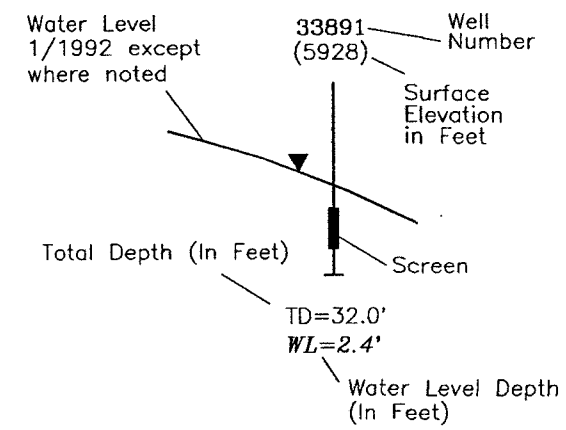
Upper Hydrostratigraphic Unit
Cross Section B–B'

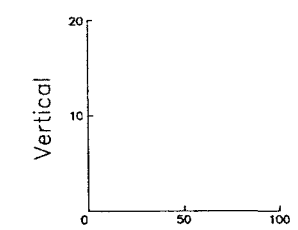
Figure 3–32

OCTOBER 1992



EXPLANATION





Horizontal
Scale in Feet
5X Vertical Exaggeration

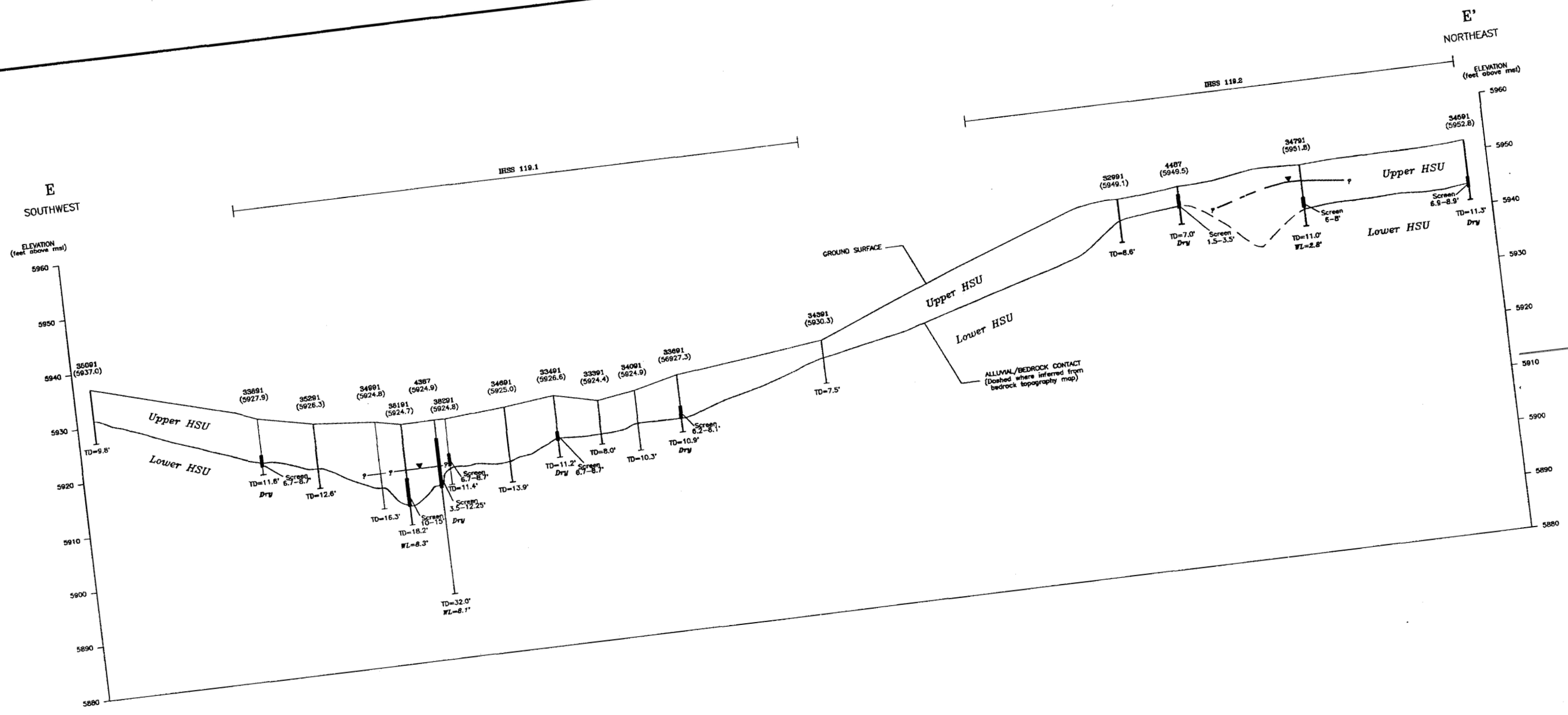
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT

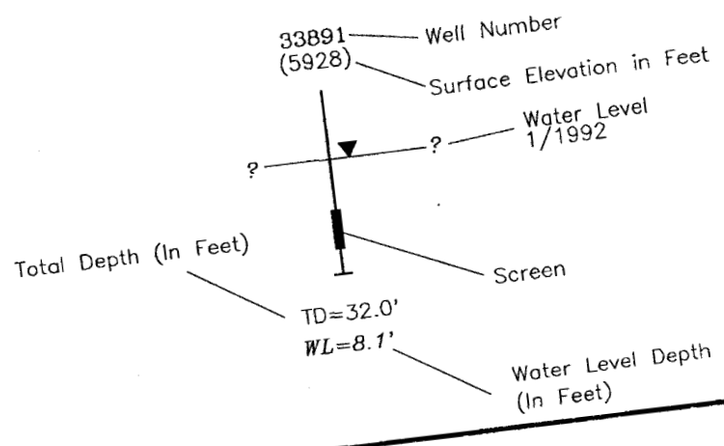
Upper Hydrostratigraphic Unit
Cross Section D–D'

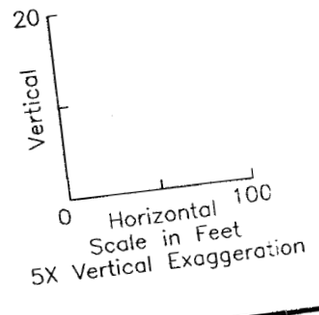
Figure 3–34

OCTOBER 1992



EXPLANATION





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881 HILLSIDE AREA
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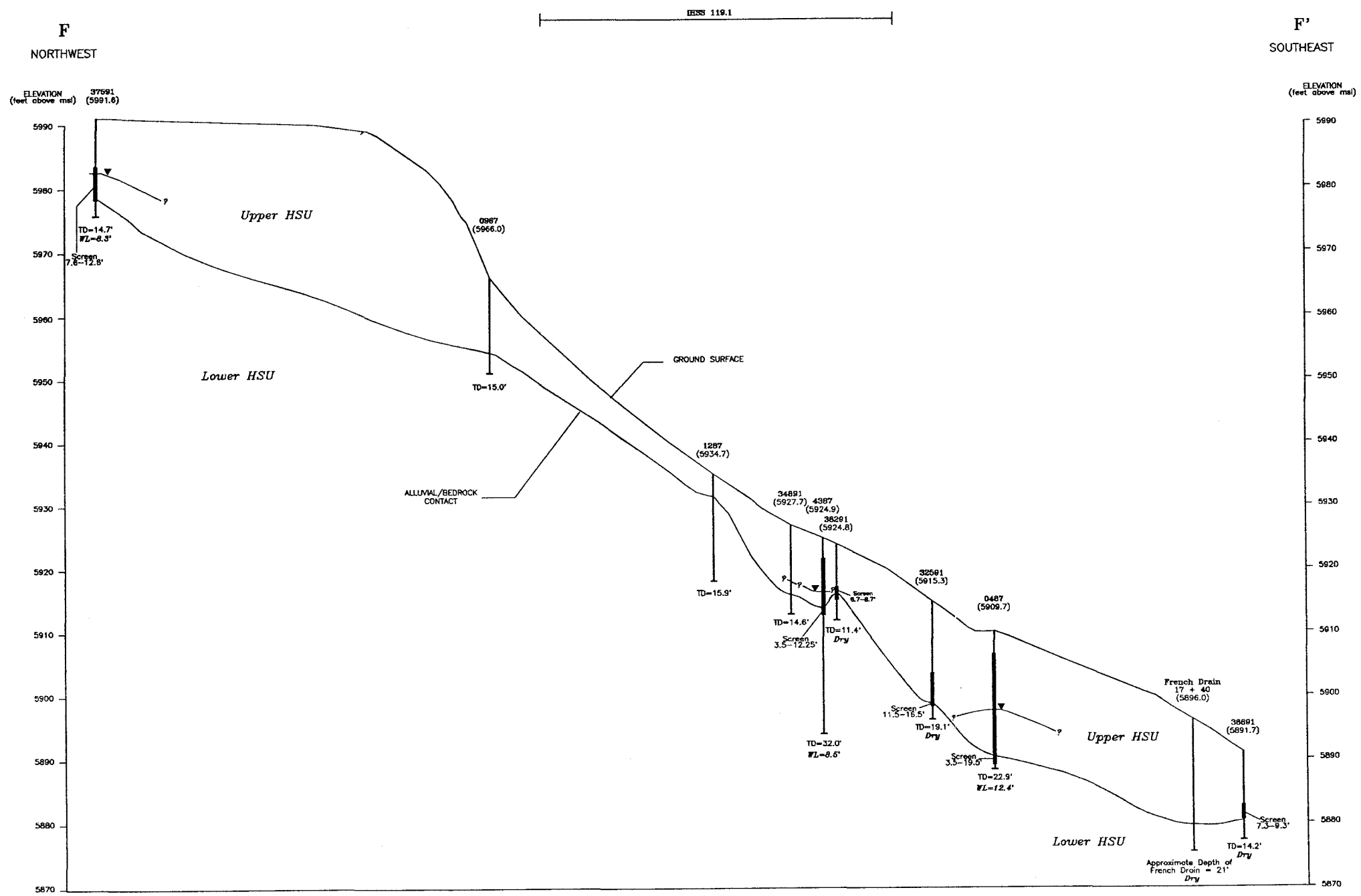
PHASE III RFI/RI REPORT

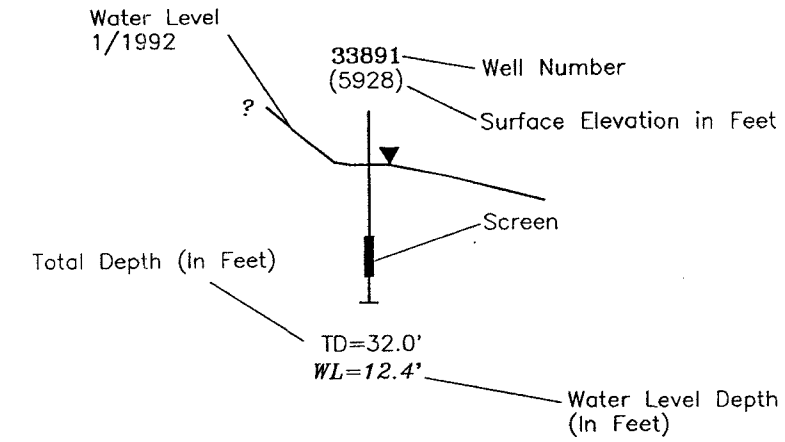
Upper Hydrostratigraphic Unit
Cross Section E–E'

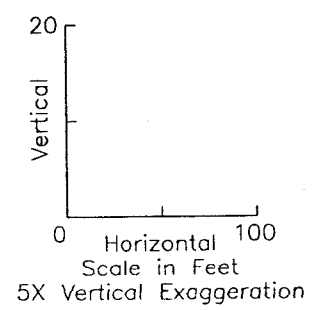
Figure 3–35

OCTOBER 1992



EXPLANATION





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Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
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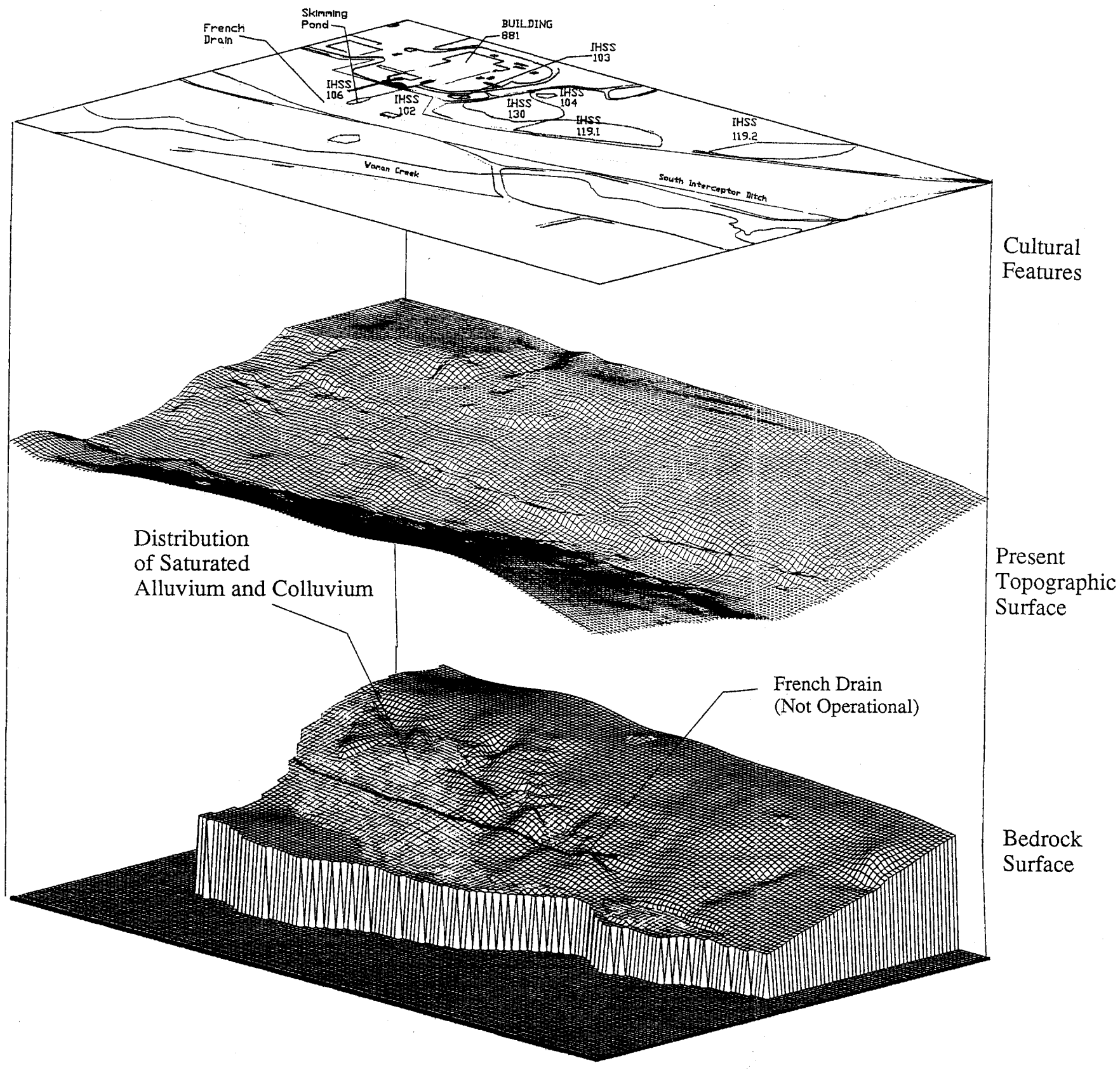
PHASE III RFI/RI REPORT

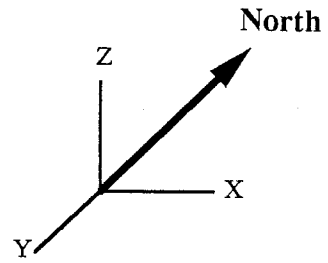
Upper Hydrostratigraphic Unit
Cross Section F–F'

Figure 3–36

OCTOBER 1992



EXPLANATION



X-Scale: 1 inch = 550 feet
Y-Scale: 1 inch = 550 feet
Z-Scale: 1 inch = 1650 feet

Vertical Exaggeration = 3X

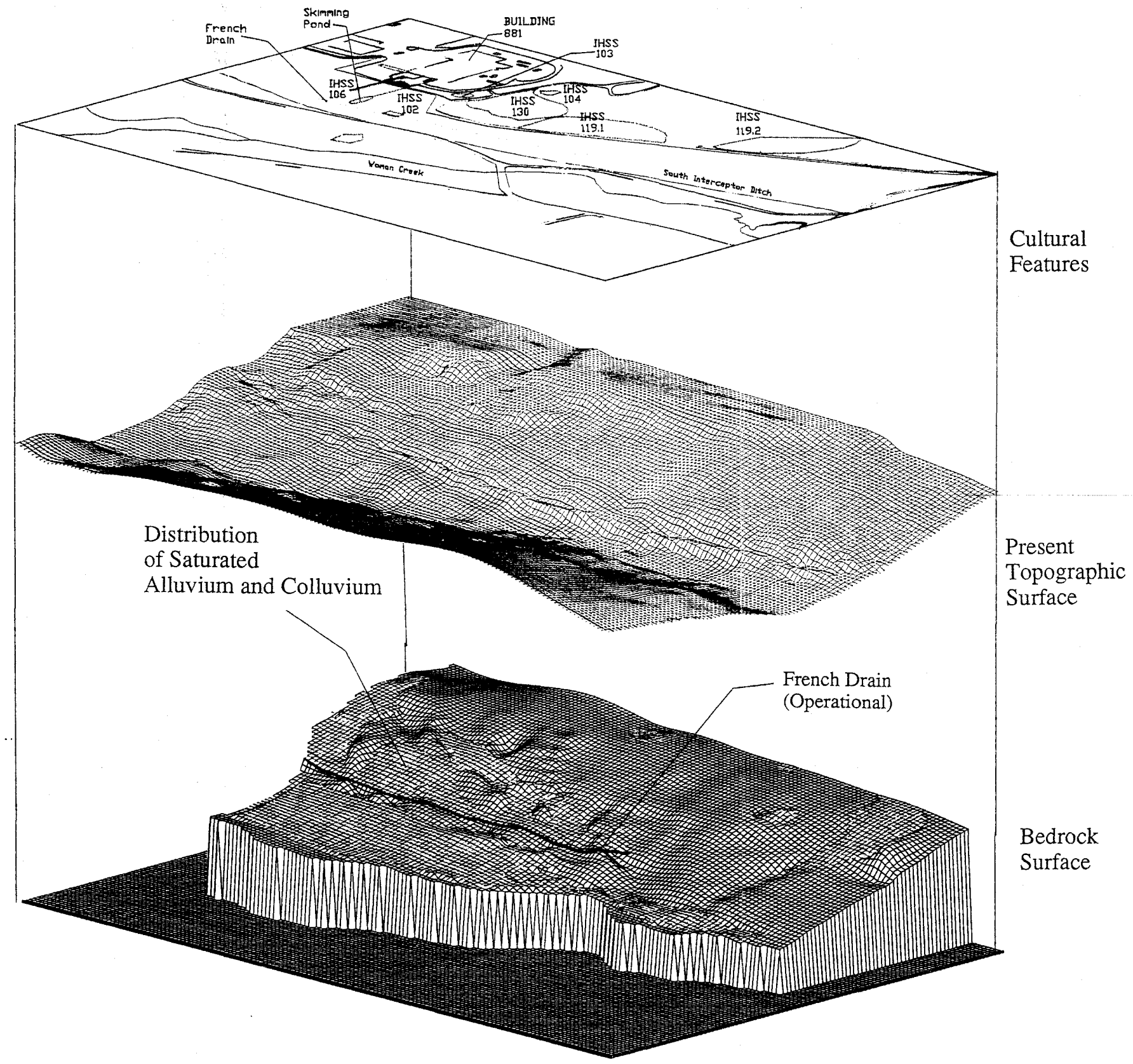
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

881 HILLSIDE AREA
OPERABLE UNIT NO. 1
REMEDIAL INVESTIGATION REPORT

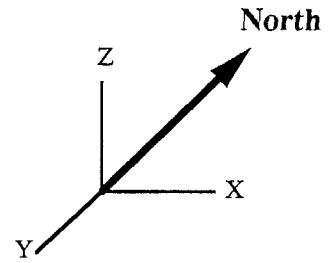
Three-Dimensional Projection of the Shallow Hydrologic System at OU1 (January)

Figure 3-45

October 1992



EXPLANATION



X-Scale: 1 inch = 550 feet
Y-Scale: 1 inch = 550 feet
Z-Scale: 1 inch = 1650 feet

Vertical Exaggeration = 3X

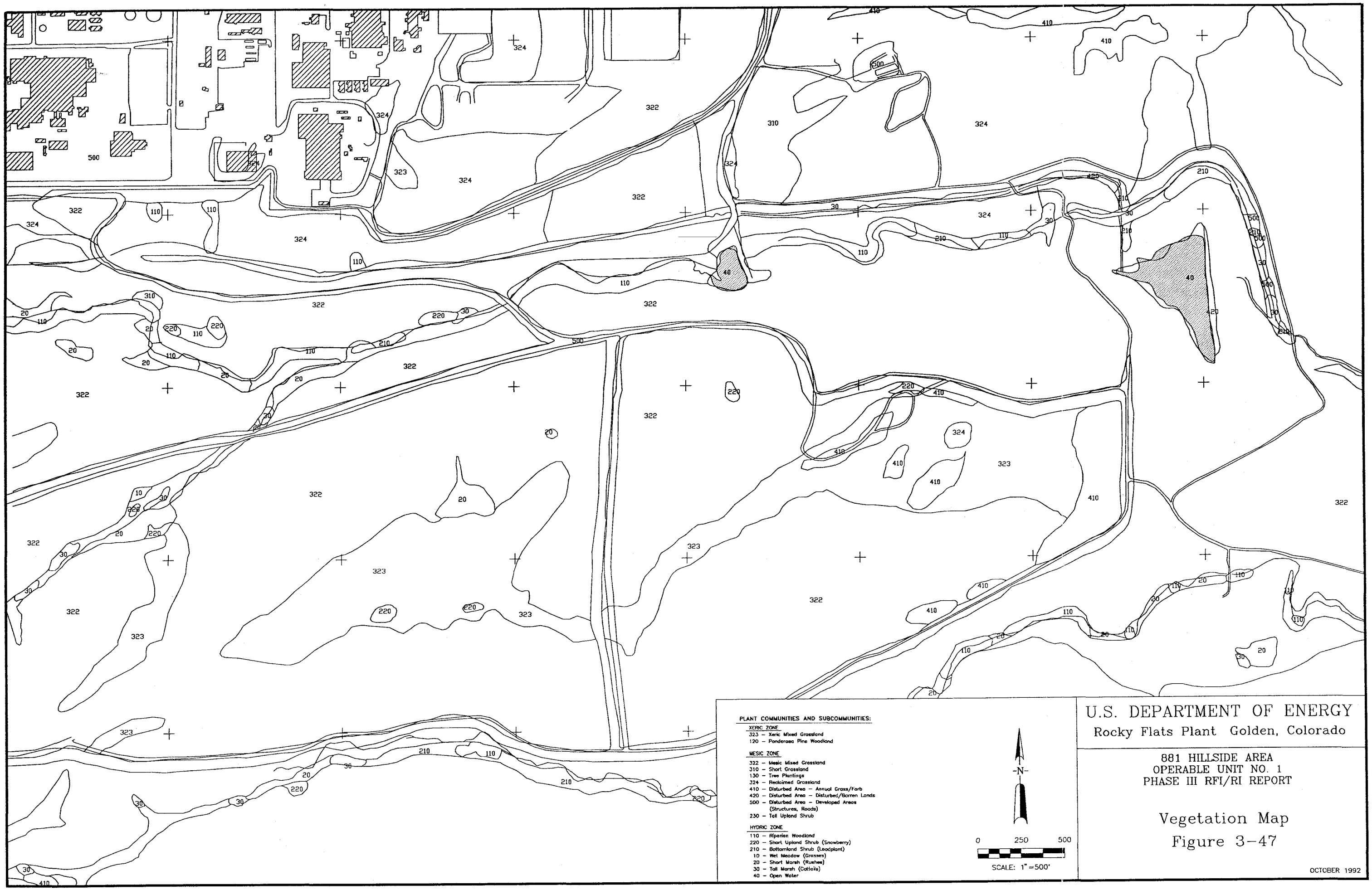
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado

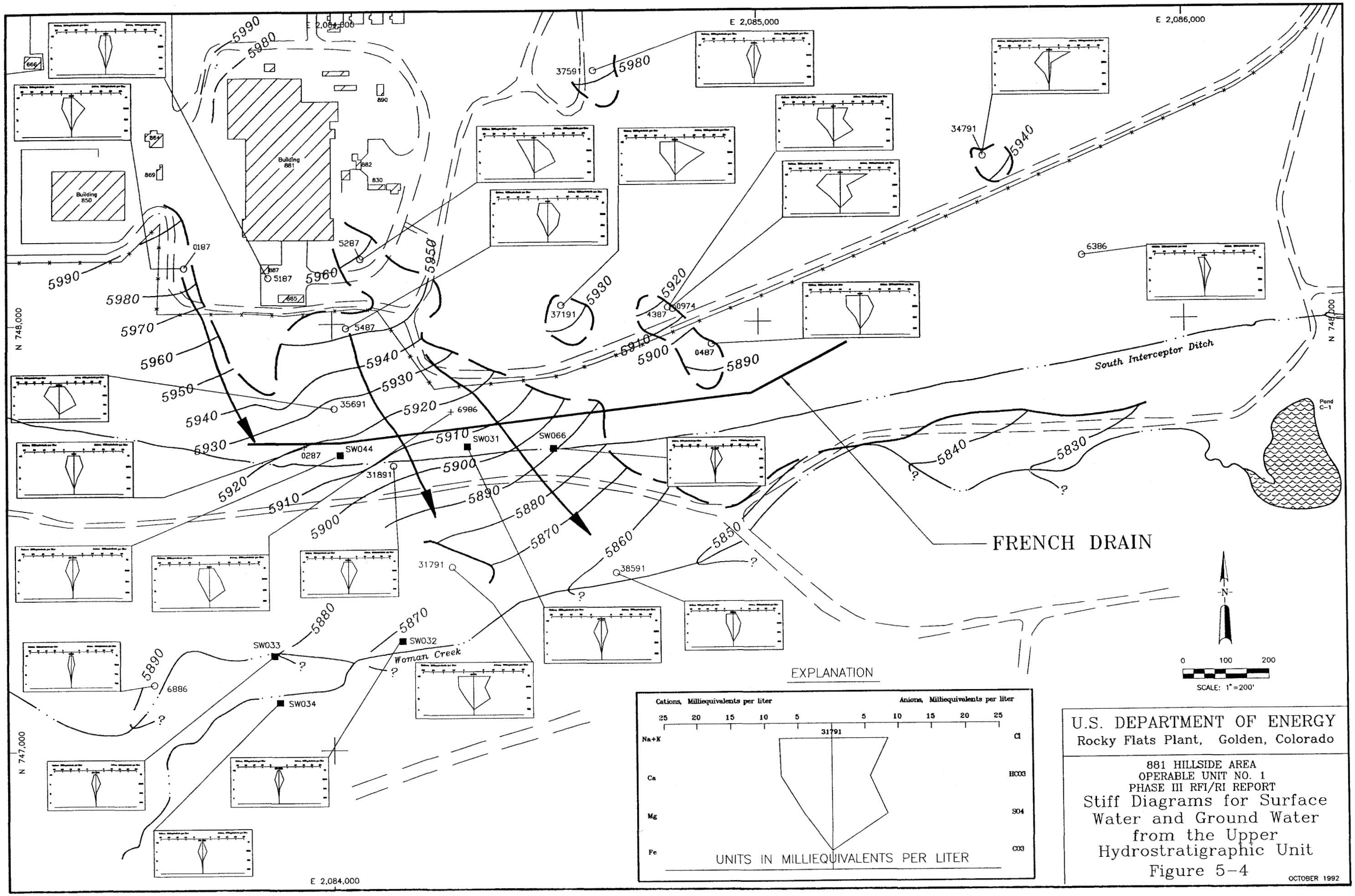
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
REMEDIAL INVESTIGATION REPORT

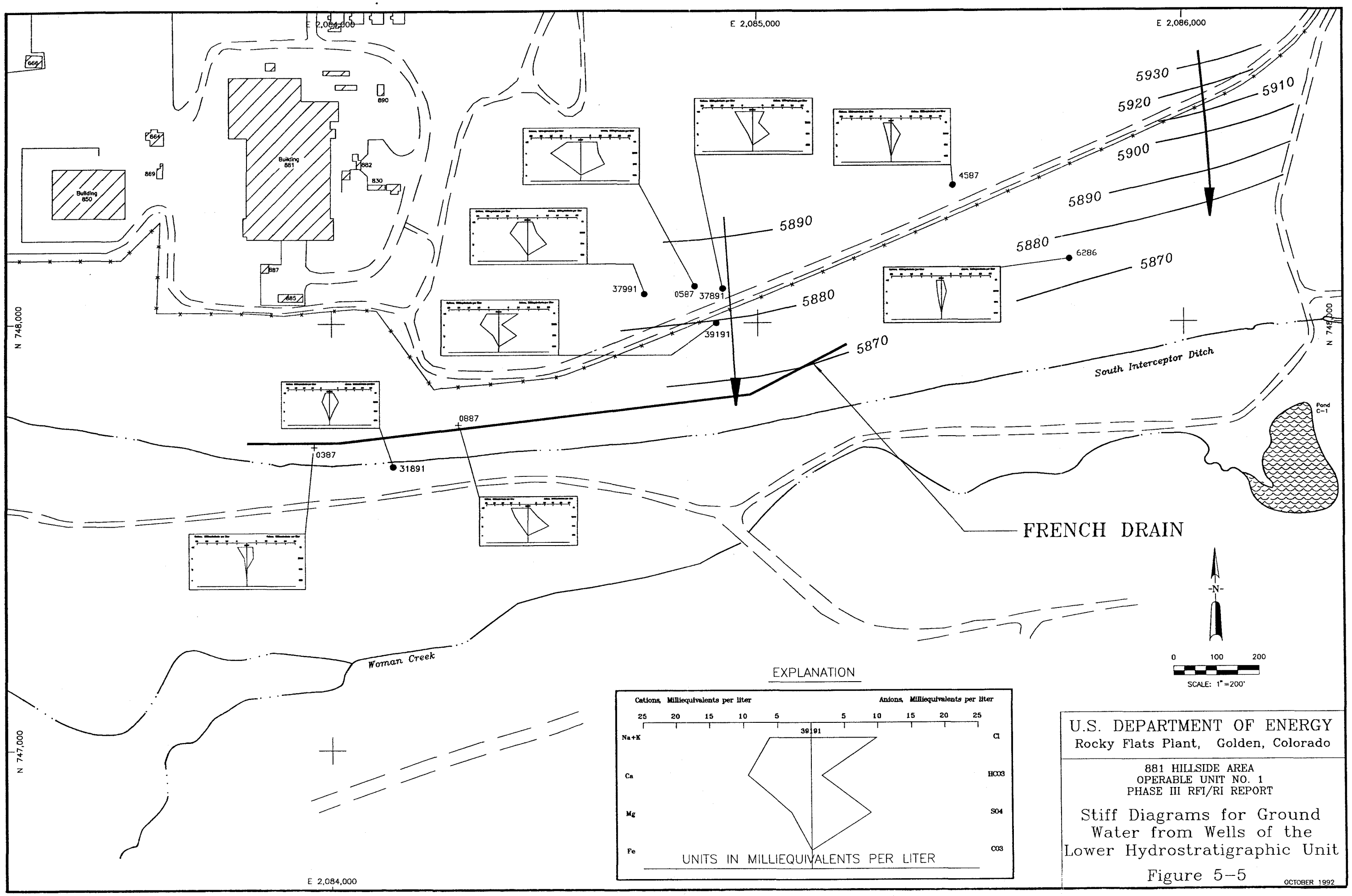
Three-Dimensional Projection of the Shallow Hydrologic System at OU1 (April)

Figure 3-46

October 1992


PLANT COMMUNITIES AND SUBCOMMUNITIES:
XERIC ZONE
323 – Xeric Mixed Grassland
120 – Ponderosa Pine Woodland
MESIC ZONE
322 – Mesic Mixed Grassland
310 – Short Grassland
130 – Tree Plantings
324 – Reclaimed Grassland
410 – Disturbed Area – Annual Grass/Forb
420 – Disturbed Area – Disturbed/Barren Lands
500 – Disturbed Area – Developed Areas (Structures, Roads)
230 – Tall Upland Shrub
HYDRIC ZONE
110 – Riparian Woodland
220 – Short Upland Shrub (Snowberry)
210 – Bottomland Shrub (Leadplant)
10 – Wet Meadow (Grasses)
20 – Short Marsh (Rushes)
30 – Tall Marsh (Cattails)
40 – Open Water
-N-
0 250 500
SCALE: 1" =500'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Vegetation Map
Figure 3-47
OCTOBER 1992


E 2,085,000
E 2,086,000
E 2,084,000
N 748,000
N 747,000
Building 881
Building 850
South Interceptor Ditch
Woman Creek
Pond C-1
FRENCH DRAIN
SW031
SW032
SW033
SW034
SW044
SW066
EXPLANATION
Cations, Milliequivalents per liter
Anions, Milliequivalents per liter
Na+K
Ca
Mg
Fe
Cl
HCO3
SO4
CO3
UNITS IN MILLIEQUIVALENTS PER LITER
SCALE: 1"=200'
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado
881 HILLSIDE AREA
OPERABLE UNIT NO. 1
PHASE III RFI/RI REPORT
Stiff Diagrams for Surface Water and Ground Water from the Upper Hydrostratigraphic Unit
Figure 5-4
OCTOBER 1992



U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant, Golden, Colorado

881 HILLSIDE AREA
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PHASE III RFI/RI REPORT

Stiff Diagrams for Ground Water from Wells of the Lower Hydrostratigraphic Unit

Figure 5-5

OCTOBER 1992