AR TARGET SHEET

The following document was too large to scan as one unit, therefore, it has been broken down into sections.

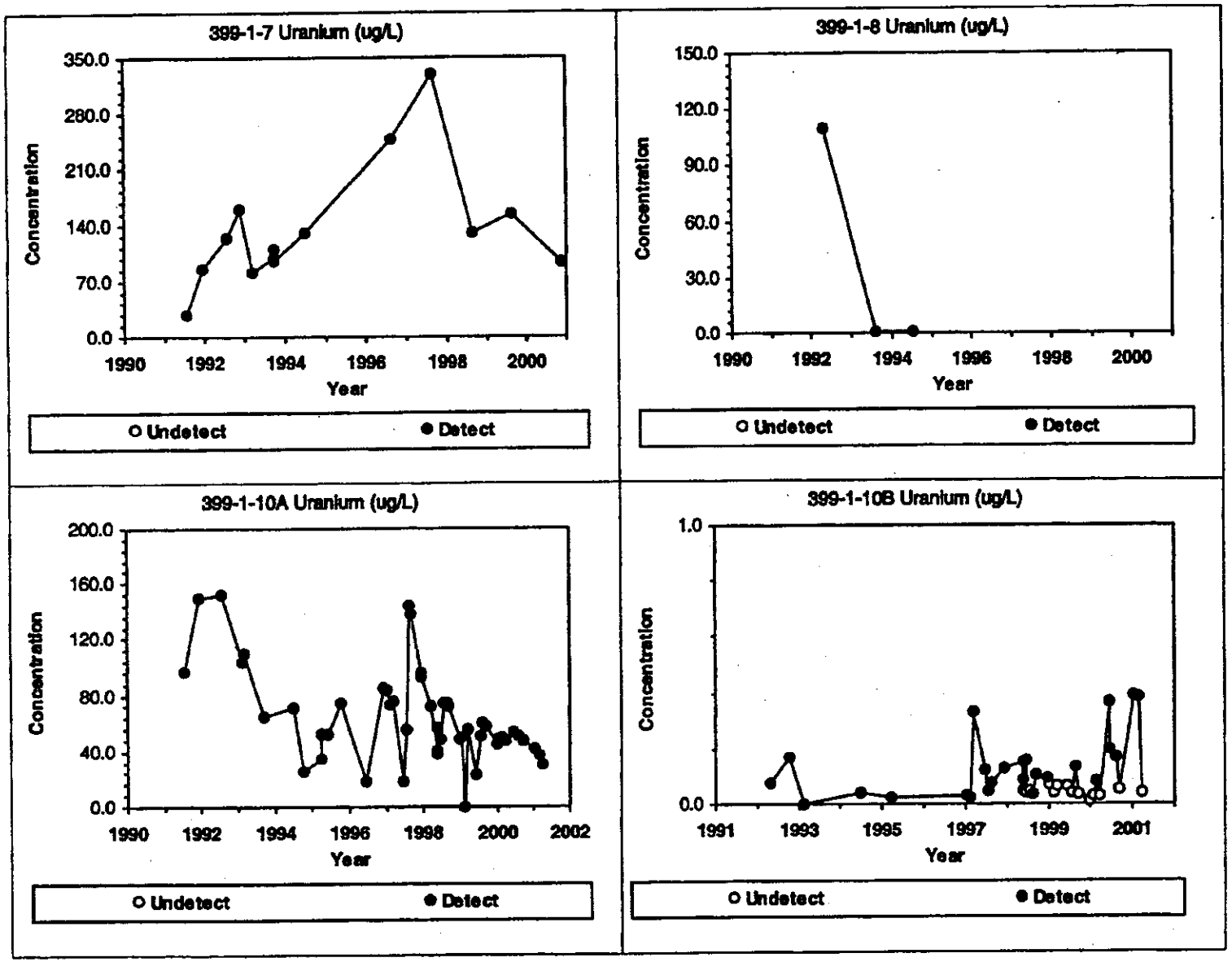
EDMC#: 0057728
SECTION: OF 2

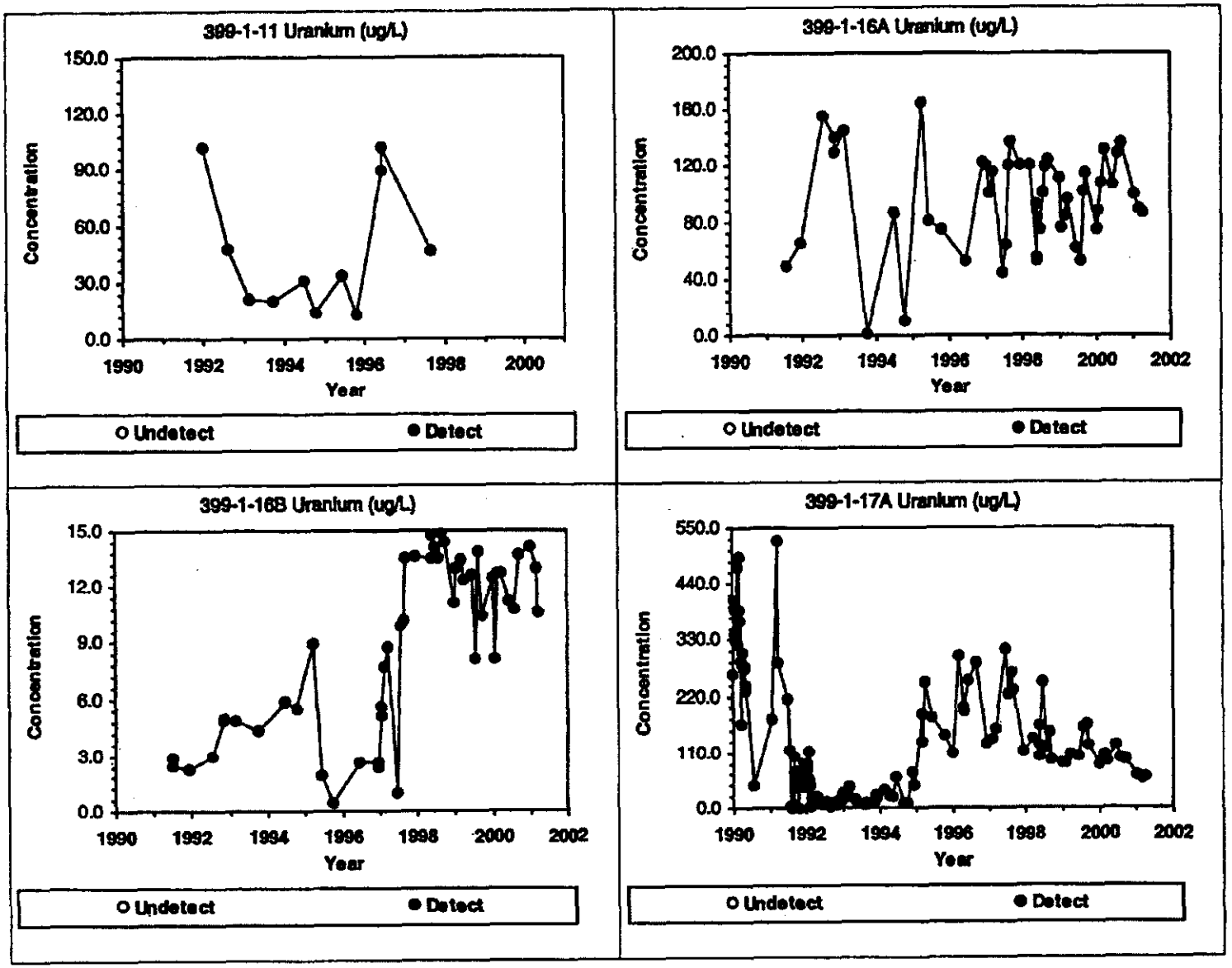
DOCUMENT #: 02-RCA-0416

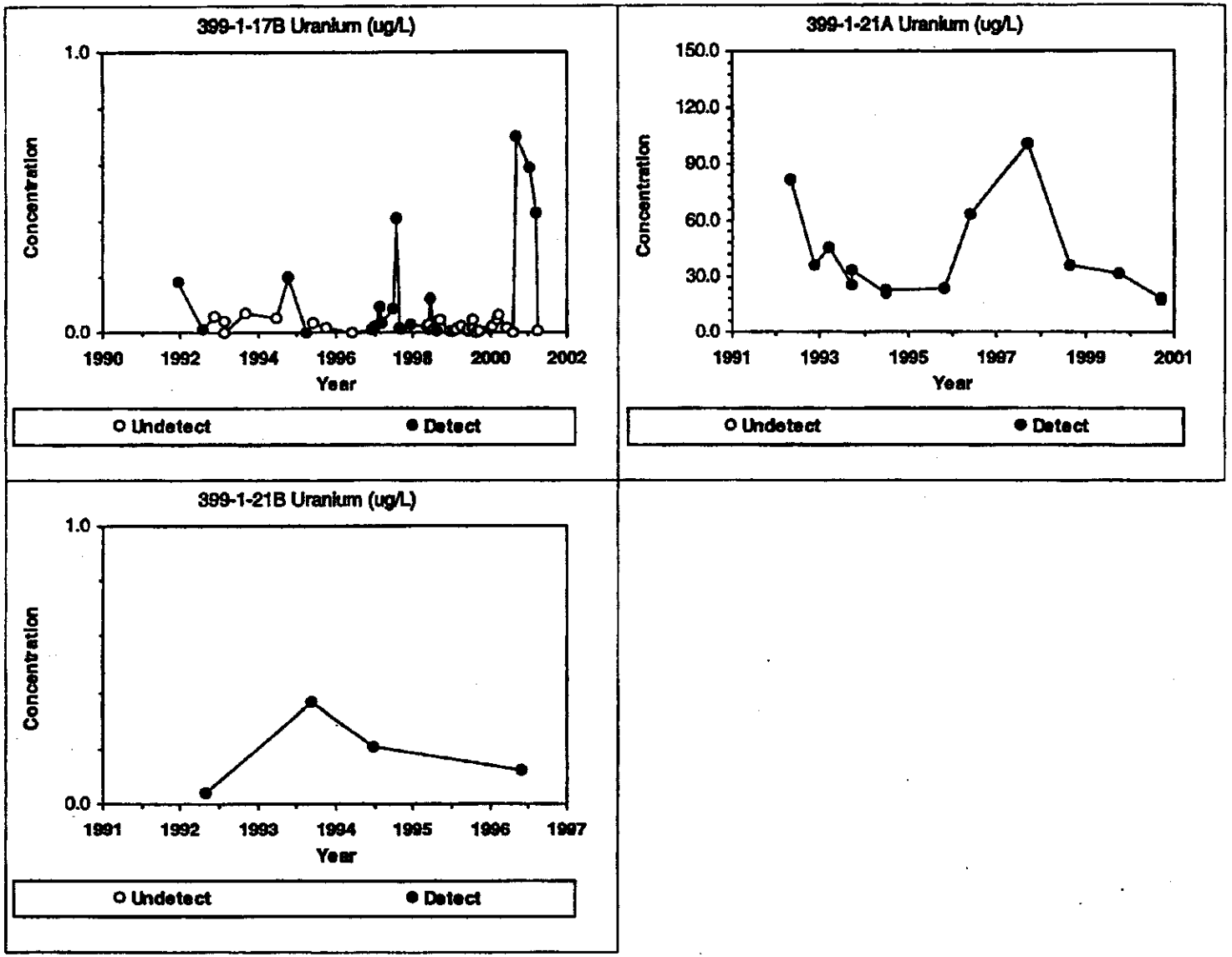
TITLE: Quarterly Notification of Class 1 Modifications to Hanford Facility RCRA Permit Dangerous Waste Portion (Quarter Ending June 30, 2002 – Permit Condition I.C.3)

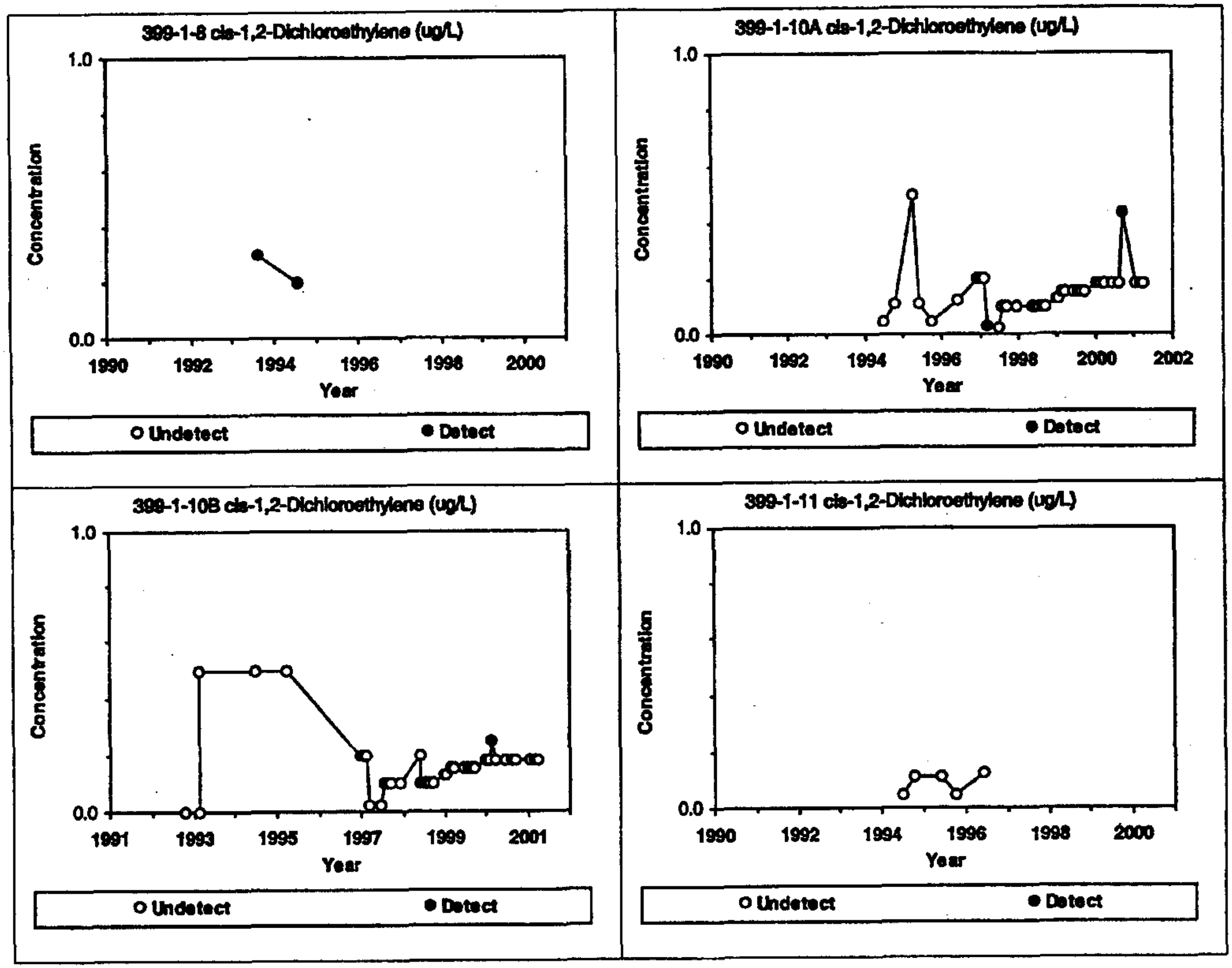
Appendix B

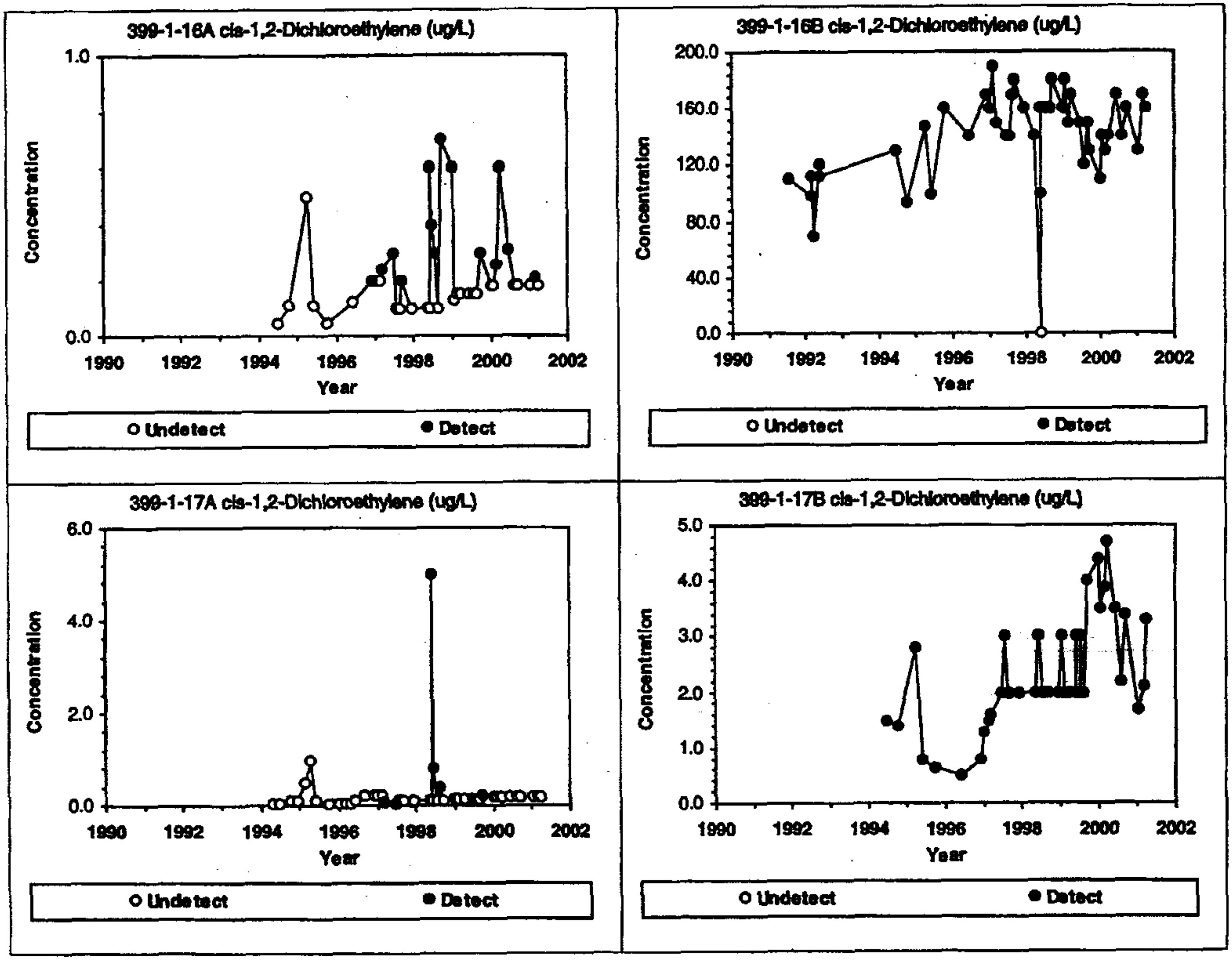
Trend Plots (Constituent vs. Time) for Uranium, Cis-1,2-Dichloroethene, Trichloroethene, and Perchloroethene at Wells in the Proposed Monitoring Network

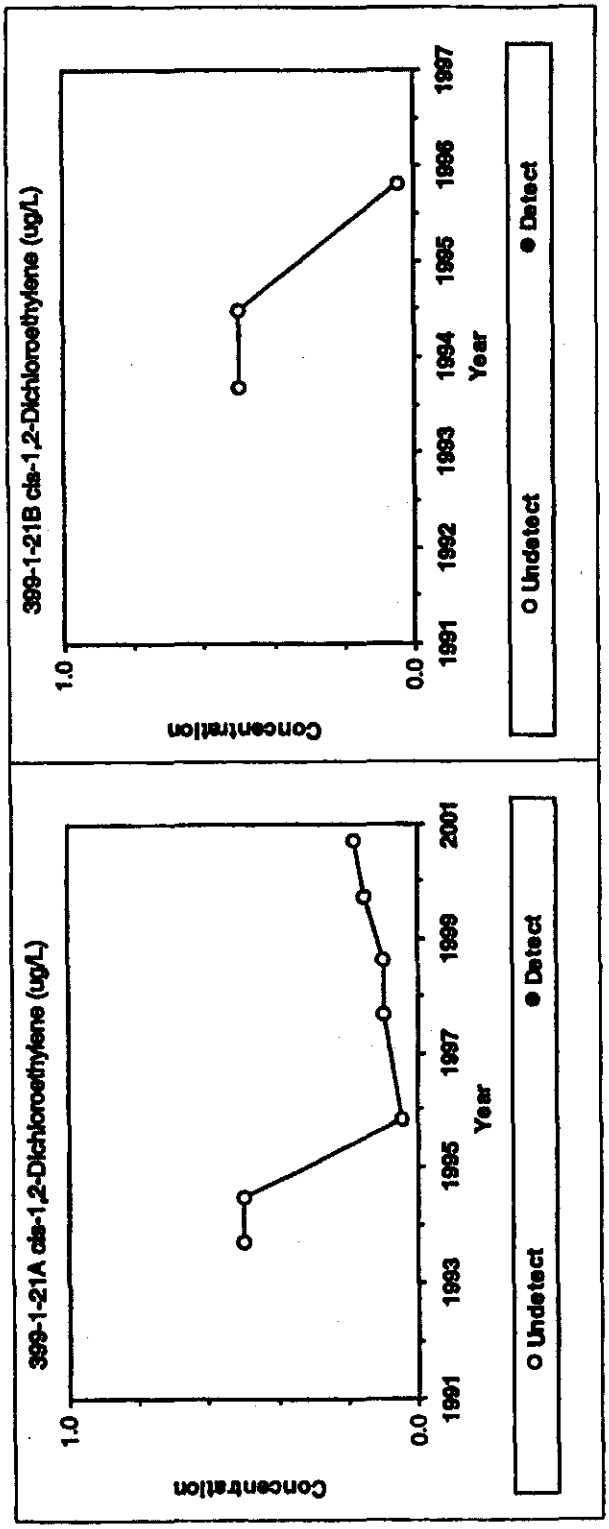

399-1-7 Uranium (ug/L)
Concentration
350.0
280.0
210.0
140.0
70.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect
399-1-8 Uranium (ug/L)
Concentration
150.0
120.0
90.0
60.0
30.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect
399-1-10A Uranium (ug/L)
Concentration
200.0
160.0
120.0
80.0
40.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect
399-1-10B Uranium (ug/L)
Concentration
1.0
0.0
1991
1993
1995
1997
1999
2001
Year
Undetect
Detect

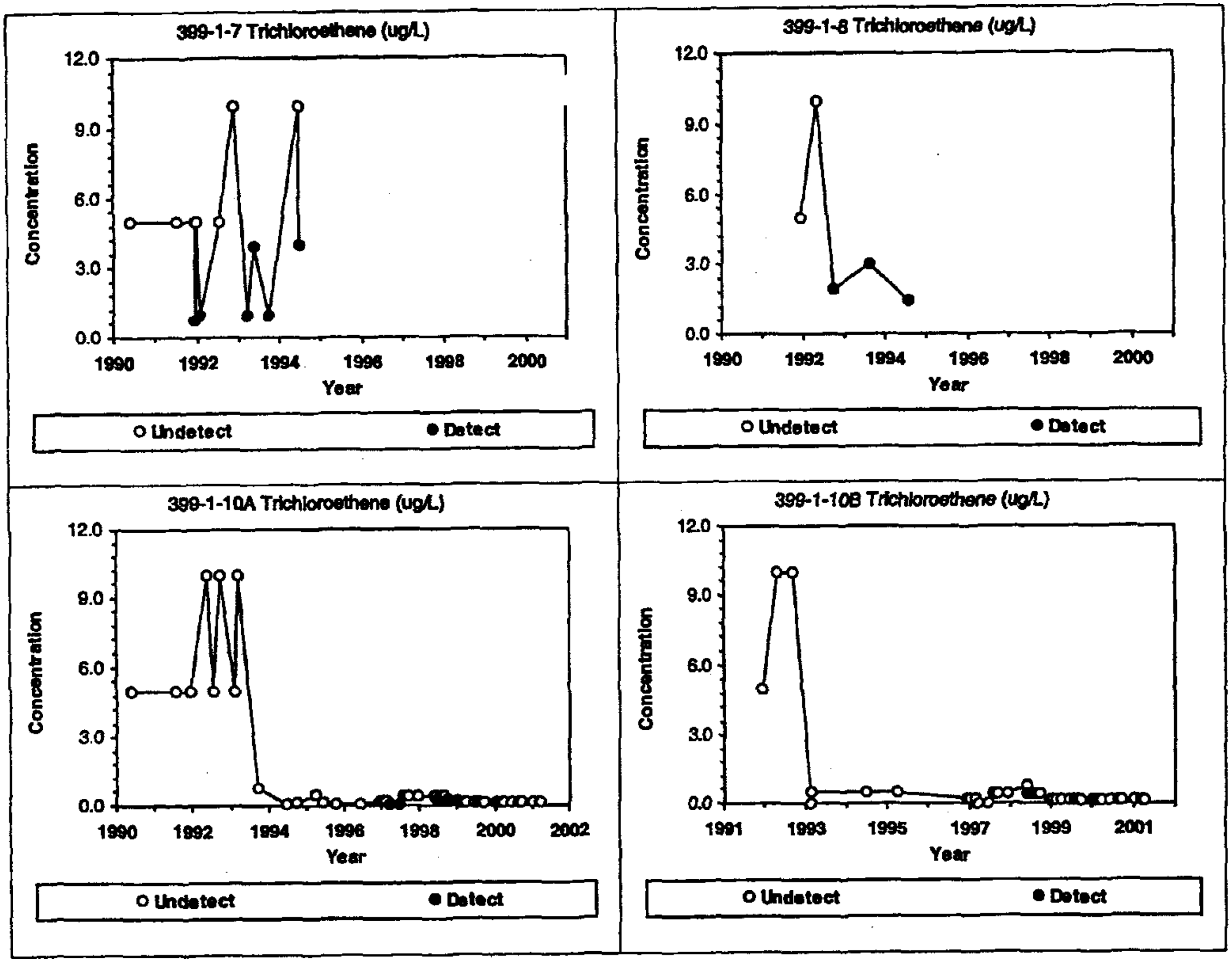

399-1-11 Uranium (ug/L)
Concentration
150.0
120.0
90.0
60.0
30.0
0.0
1990
1992
1994
1996
1998
2000
Year
O Undetect
● Detect
399-1-16A Uranium (ug/L)
Concentration
200.0
160.0
120.0
80.0
40.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
O Undetect
● Detect
399-1-16B Uranium (ug/L)
Concentration
15.0
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
O Undetect
● Detect
399-1-17A Uranium (ug/L)
Concentration
550.0
440.0
330.0
220.0
110.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
O Undetect
● Detect


399-1-17B Uranium (ug/L)
Concentration
1.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect
399-1-21A Uranium (ug/L)
Concentration
150.0
120.0
90.0
60.0
30.0
0.0
1991
1993
1995
1997
1999
2001
Year
Undetect
Detect
399-1-21B Uranium (ug/L)
Concentration
1.0
0.0
1991
1992
1993
1994
1995
1996
1997
Year
Undetect
Detect

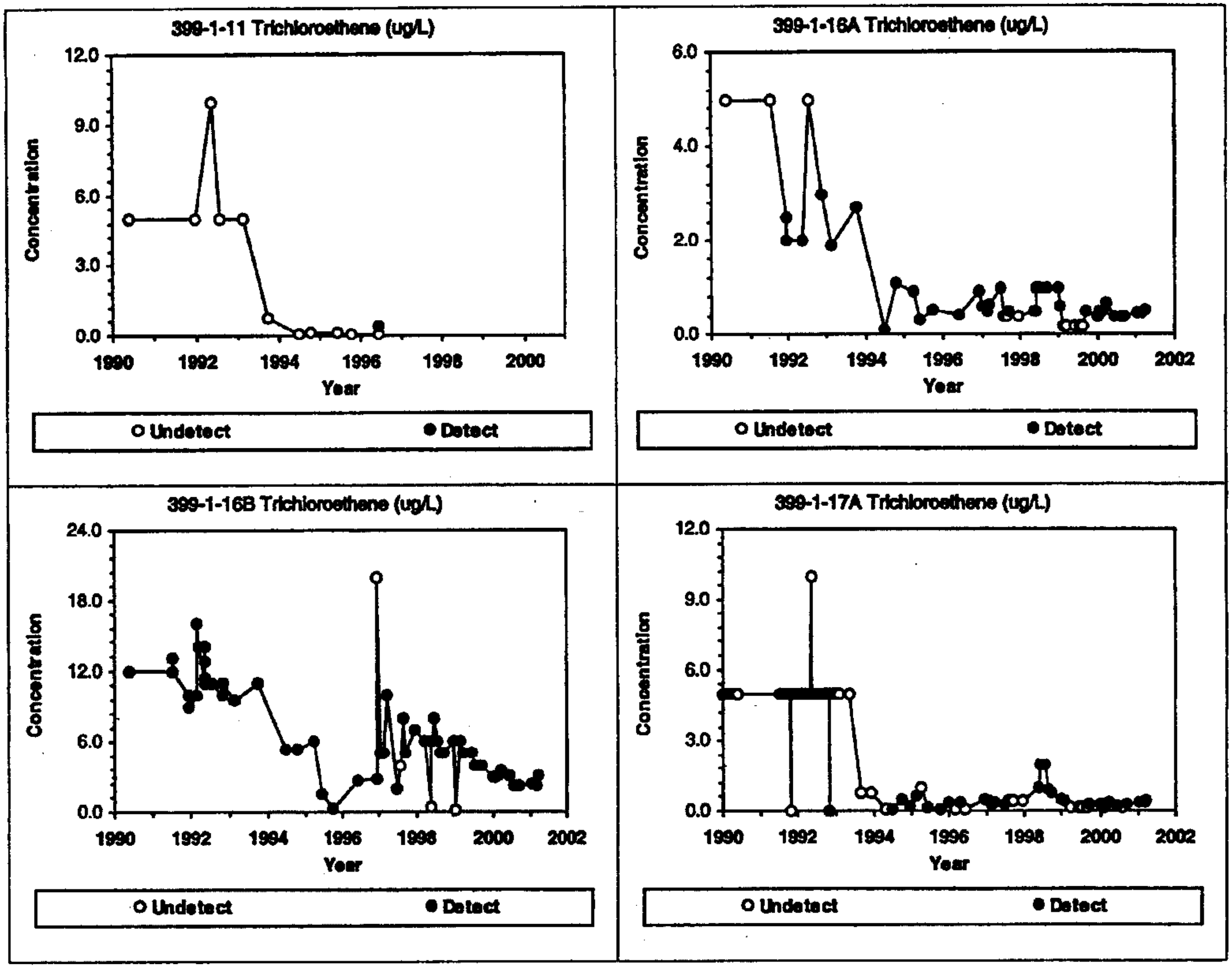

399-1-8 cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect
399-1-10A cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect
399-1-10B cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1991
1993
1995
1997
1999
2001
Year
Undetect
Detect
399-1-11 cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect

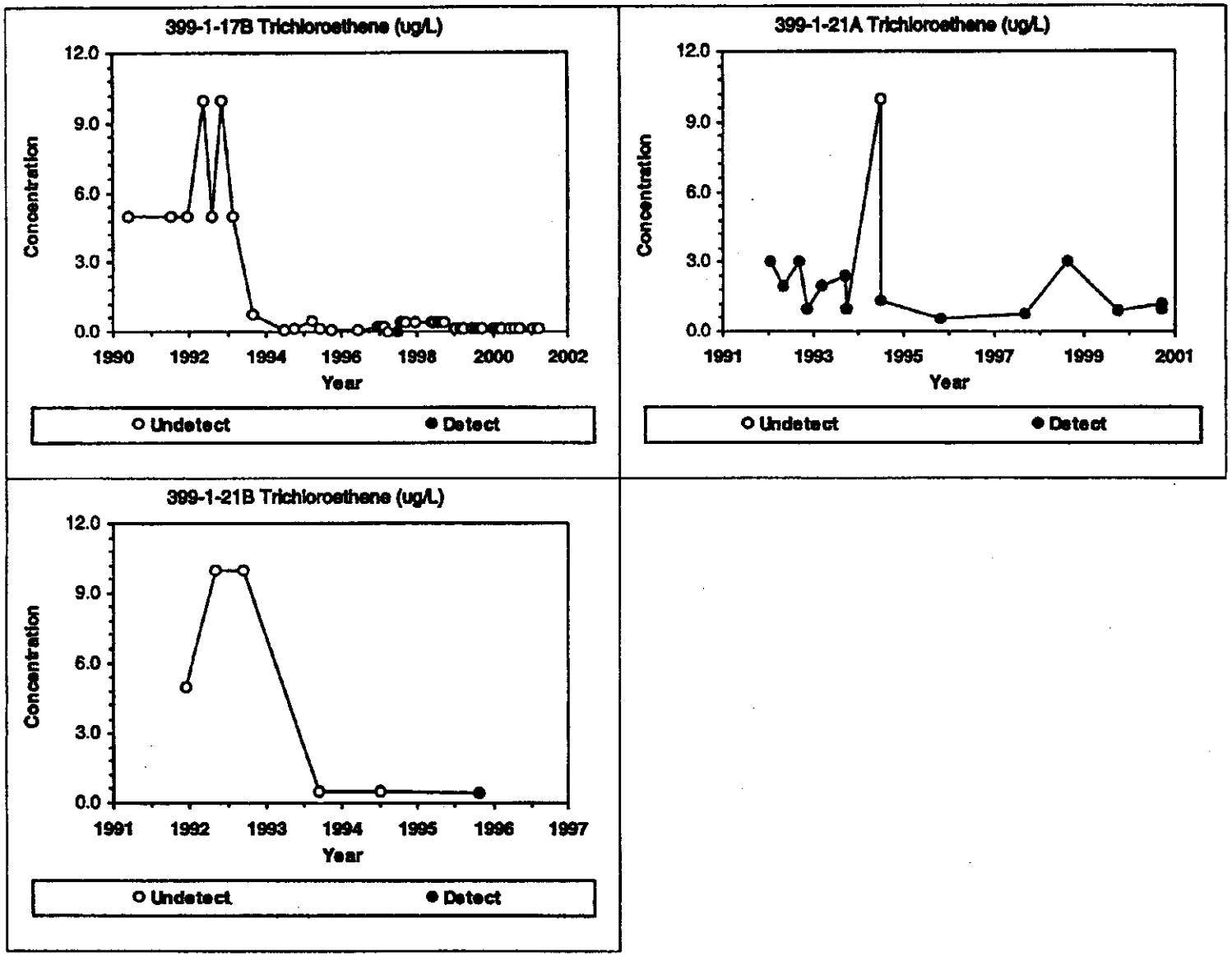

399-1-16A cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
o Undetect
● Detect
399-1-16B cis-1,2-Dichloroethylene (ug/L)
Concentration
200.0
160.0
120.0
80.0
40.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
o Undetect
● Detect
399-1-17A cis-1,2-Dichloroethylene (ug/L)
Concentration
6.0
4.0
2.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
o Undetect
● Detect
399-1-17B cis-1,2-Dichloroethylene (ug/L)
Concentration
5.0
4.0
3.0
2.0
1.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
o Undetect
● Detect

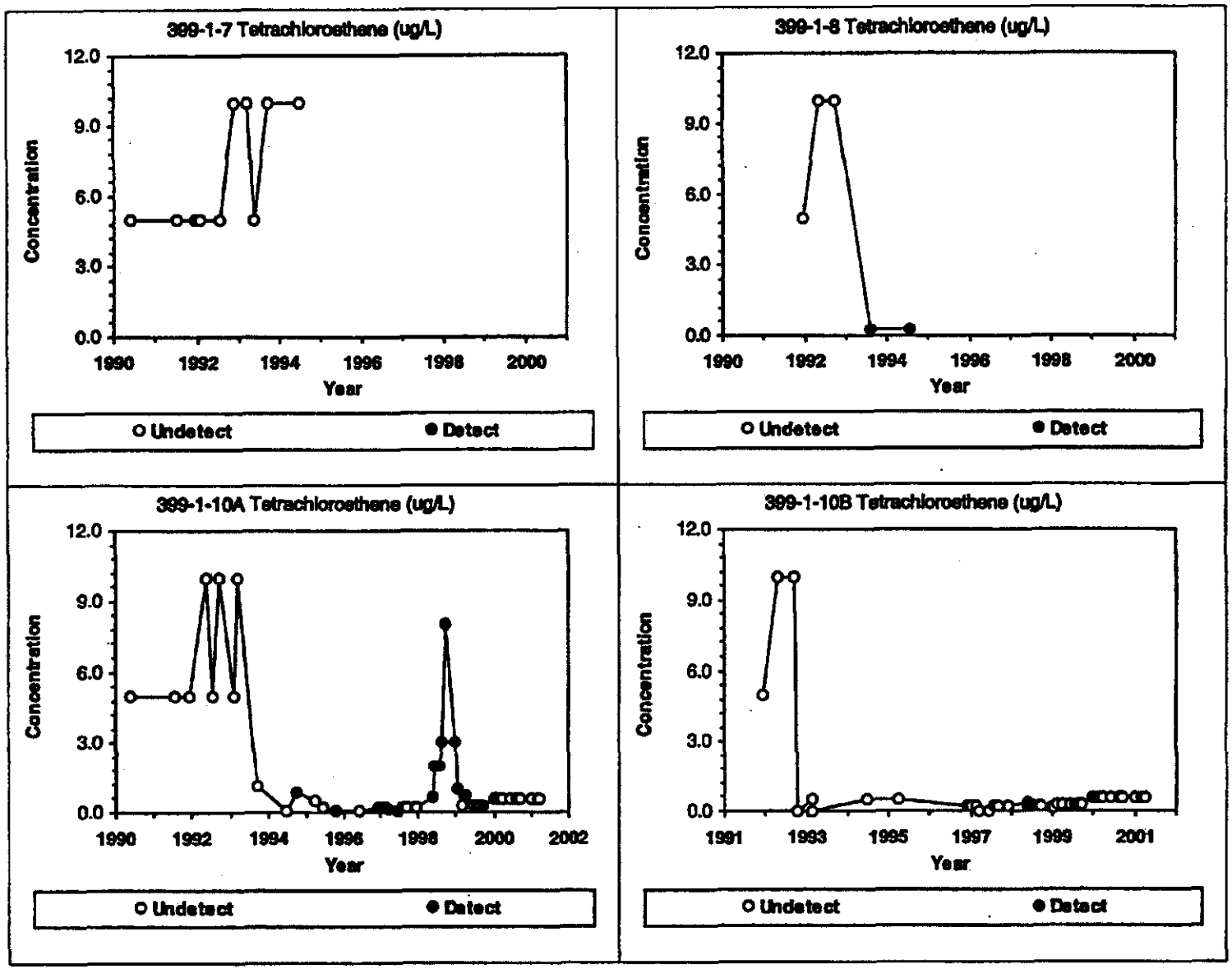

399-1-21A cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1991
1993
1995
1997
1999
2001
Year
O Undetect
● Detect
399-1-21B cis-1,2-Dichloroethylene (ug/L)
Concentration
1.0
0.0
1991
1992
1993
1994
1995
1996
1997
Year
O Undetect
● Detect

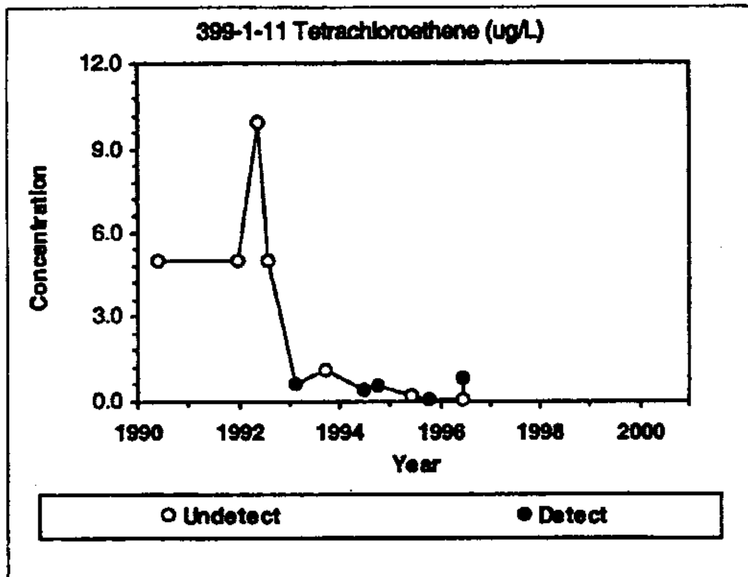


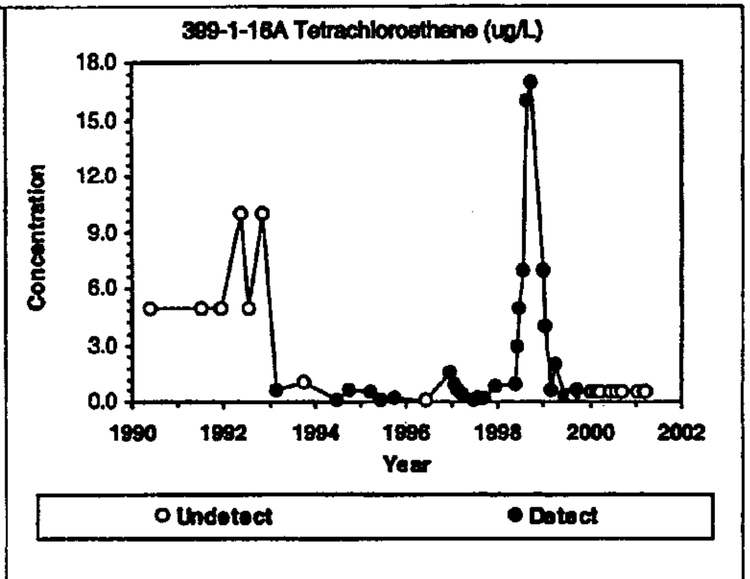
399-1-7 Trichloroethene (ug/L)
399-1-8 Trichloroethene (ug/L)
399-1-10A Trichloroethene (ug/L)
399-1-10B Trichloroethene (ug/L)
Concentration
Year
0.0
3.0
6.0
9.0
12.0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
Undetect
Detect

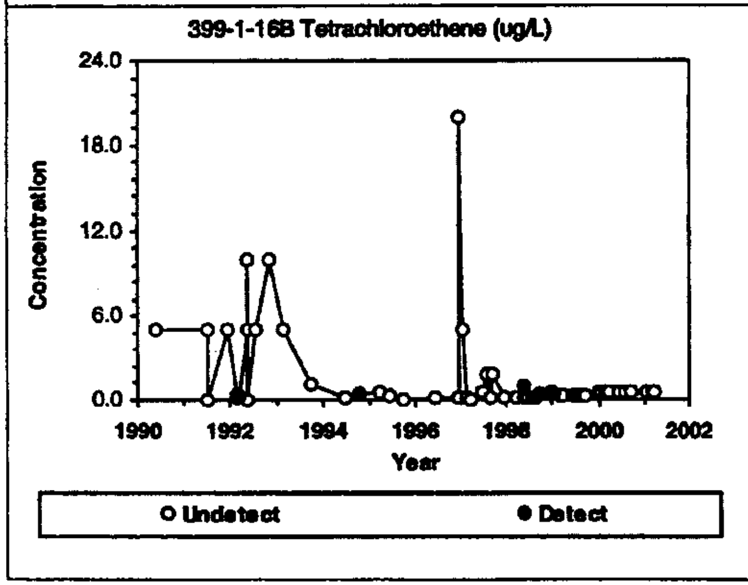

399-1-11 Trichloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
Year
O Undetect
● Detect
399-1-16A Trichloroethene (ug/L)
Concentration
6.0
4.0
2.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
O Undetect
● Detect
399-1-16B Trichloroethene (ug/L)
Concentration
24.0
18.0
12.0
6.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
O Undetect
● Detect
399-1-17A Trichloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
O Undetect
● Detect

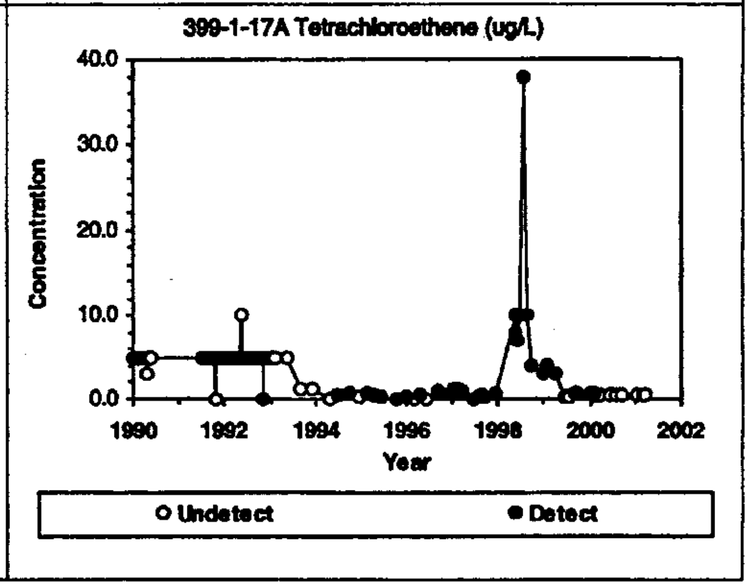

399-1-17B Trichloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect
399-1-21A Trichloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1991
1993
1995
1997
1999
2001
Year
Undetect
Detect
399-1-21B Trichloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1991
1992
1993
1994
1995
1996
1997
Year
Undetect
Detect

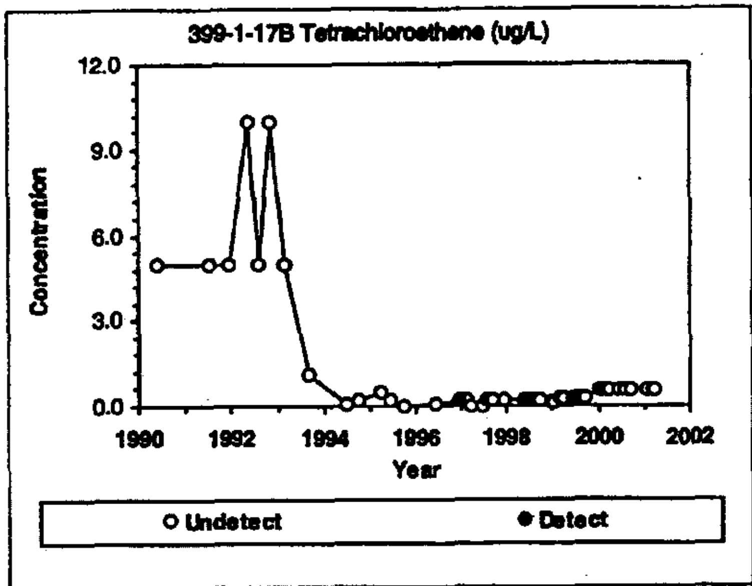

399-1-7 Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect
399-1-8 Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect
399-1-10A Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect
399-1-10B Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1991
1993
1995
1997
1999
2001
Year
Undetect
Detect

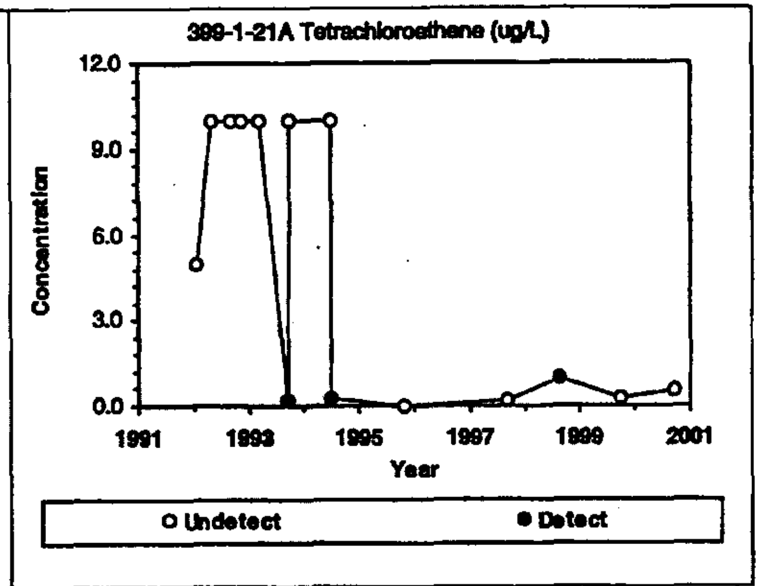

399-1-11 Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
Year
Undetect
Detect

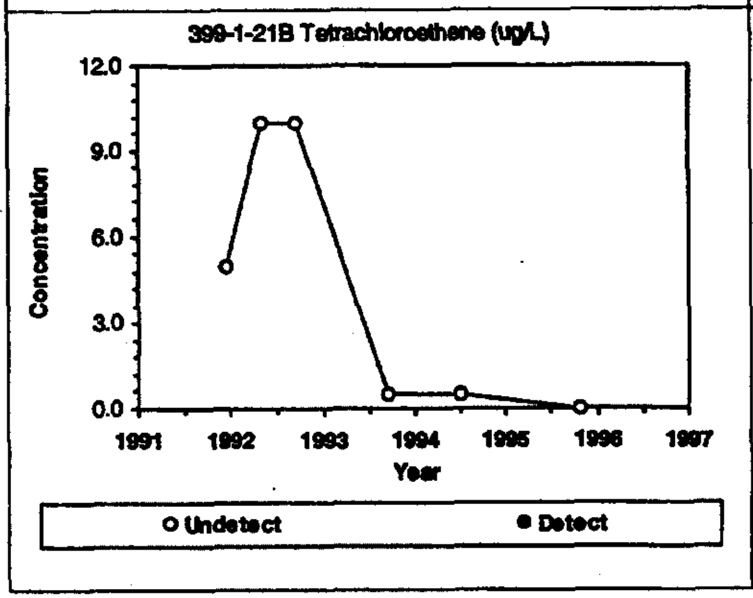

399-1-16A Tetrachloroethene (ug/L)
Concentration
18.0
15.0
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect


399-1-16B Tetrachloroethene (ug/L)
Concentration
24.0
18.0
12.0
6.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect


399-1-17A Tetrachloroethene (ug/L)
Concentration
40.0
30.0
20.0
10.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect


399-1-17B Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1990
1992
1994
1996
1998
2000
2002
Year
Undetect
Detect


399-1-21A Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1991
1993
1995
1997
1999
2001
Year
Undetect
Detect


399-1-21B Tetrachloroethene (ug/L)
Concentration
12.0
9.0
6.0
3.0
0.0
1991
1992
1993
1994
1995
1996
1997
Year
Undetect
Detect

Appendix C

Well Construction Diagrams for Wells in the Proposed Monitoring Network

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method: Cable tool
Drilling Fluid Used: Water
Driller's Name: Bigham
Drilling Company: Omwego Drilling
Date Started: 04Feb85

Sample Method: Hard tool (nom)
Additives Used: Not documented
WA State Lic Nr: 0036
Company Location: Kennewick, WA
Date Complete: 25Feb85

WELL NUMBER: 399-1-7
TEMPORARY WELL NO: 399-T-1
Hanford Coordinates: N/S S 23,597 E/W E 14,111
State RN 55,779.9 RE 15,716.5
Coordinates: N Not documented E Not doc
Start Card #:Not documented T___ R___ S___
Elevation Ground surface: 382.8-ft Estimated

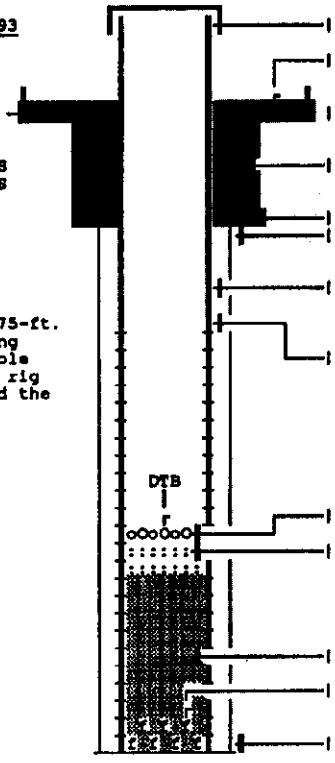
Depth to water: 37.0-ft Feb85
(Ground surface) 40.7-ft 17Dec93

GENERALISED STRATIGRAPHY

Geologist's Log

0-5: BACKFILL (SAND, COBBLES, and BOULDERS
5-15: SAND, COBBLES and BOULDERS
15-20: SAND, PEBBLES and COBBLES
20-75: Sandy GRAVEL

Original hole was drilled to 75-ft. The screen was destroyed during installation. The original hole could not be reentered so the rig was moved 6-ft to the west and the hole redrilled to 75-ft. No documentation of grouting the original hole.



Elevation of reference point: [385.63-ft]
(top of casing)
Height of reference point above ground surface [2.8-ft]
Depth of surface seal [15-ft]
Type of surface seal:
3-ft x 3-ft concrete pad
Cement grout to 15-ft
Hole diameter,
0-15-ft, 13-in nominal
15-75-ft, 9-in nominal
6-in ID 316 stainless steel casing, +2.8-25.0-ft
6-in T316 stainless steel screen, 25-75-ft, #15-slot
DTB=Depth to bottom, 54.4-ft, 17Jan92
Gravel, 54.4-57.5-ft
Bentonite pellets, 57.5-62.2-ft
Silica sand, 62.2-71.9-ft
Fill, 71.9-75.0-ft
Borehole drilled depth: [75-ft]

Drawing By: RKL/3-01-07.ASB
Date : 12Jan94
Reference : HANFORD WELLS
WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-7

WELL DESIGNATION	:	399-1-7
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 23,597 E 14,111 [Hanford Wells]
Richland		RN 55,779.9 RE 15,716.5 [24Apr87-300 Area]
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Feb85
DEPTH DRILLED (GS)	:	75-ft
MEASURED DEPTH (GS	:	54.4-ft, 17Jan92
DEPTH TO WATER (GS)	:	37-ft, Feb85; 40.7-ft, 17Dec93
CASING DIAMETER	:	6-in, stainless steel, +2.8-25-ft.
ELEV TOP CASING	:	385.63-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	382.8-ft Estimated
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	25-75-ft, #15-slot, stainless steel
COMMENTS	:	FIELD INSPECTION, 19Oct90; Stainless steel casing. 3-ft x 3-ft concrete pad, 2 posts (not removable), capped and locked, brass cap in pad with well ID. Not in radiation zone. OTHER: Original hole was drilled to 75-ft. The screen was destroyed during installation. The original hole could not be re-entered so the rig was moved 6 ft to the west and hole redrilled to 75-ft. No documentation of grouting the original hole. Surface seal to 12-ft. No documentation of annular seal.
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface: 11Dec90; DTB-72-ft, silty. DTW-39.3-ft, clean. Vadose/submerged casing clean. Screen 25.2-72-ft. Continous wrap with a small amount of algae buildup. Water clear. The well does not need cleaning.
DATE EVALUATED	:	Feb91
EVAL RECOMMENDATION	:	1) Reduce monitored interval to 15-20 ft. 2) Survey to water level measurement standards.
LISTED USE	:	300 Area monthly water level measurement 23Aug85-22Nov93;
CURRENT USER	:	WHC ES&M RCRA sampling and w/l monitoring, ER CERCLA sampling and W/l monitoring; PNL sitewide sampling and w/l monitoring 93
PUMP TYPE	:	Hydrostar,
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System
REHABILITATION	:	22Jul91; Reduced monitored interval: (Depths TOC). 15-gal silica sand, 65.0-74.7-ft; 5-gals bentonite pellets, 60.3-65.0-ft; 5-gal gravel, 57.2-60.3-ft. 02Aug91; Developed to <5 NTU.

WELL CONSTRUCTION AND COMPLETION SUMMARY

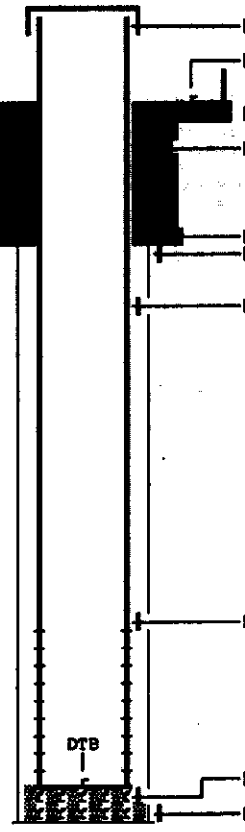
Drilling Method: Cable tool
Drilling Fluid Used: Water
Driller's Name: J. Baltzens
Drilling Company: Cenwego Drilling
Date Started: 22Jul85
Sample Method: Hard tool (nom)
Additives Used: Not documented
WA State Lic Nr: Not documented
Company Location: Kennewick, WA
Date Complete: 08Aug85

WELL NUMBER: 399-1-8
TEMPORARY WELL NO: 399-T-2
Hanford Coordinates: N/S S 23,615 E/W E 14,103
State Coordinates: N RN 55,762.1 E RE 15,708.5 Not documented Not doc
Start Card #: Not documented T___ R___ S___
Elevation Ground surface: 383.3-ft Estimated

Depth to water: ~40.0-ft Aug85
(Ground surface) 41.2-ft 17Dec93

GENERALIZED STRATIGRAPHY — Geologist's Log

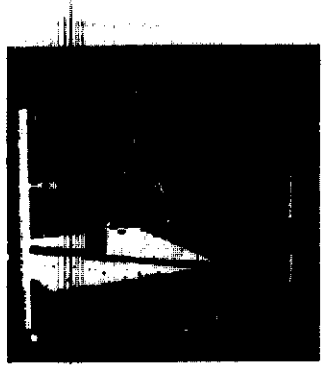
0-5: BACKFILL (COBBLES and SAND, some small BOULDERS)
5-15: COBBLES and SAND
15-20: BOULDERS, COBBLES and SAND
20-21: COBBLES and SAND
21-23: Gravelly SAND
23-25: SILT lenses mixed with broken GRAVEL
25-75: Sandy GRAVEL
75-85: SAND, coarse
85-90: SAND, granular
90-105: Sandy GRAVEL
105-106: Silty SAND with GRAVEL
106-108: Clayey SAND



Elevation of reference point: [384.91-ft] (top of casing)
Height of reference point above ground surface [1.6-ft]
Depth of surface seal [18-ft]
Type of surface seal: Cement/5% bentonite grout to 18-ft with 4-ft x 4-ft concrete pad
Hole diameter, 0-18-ft, 13-in nominal; 18-107-ft, 9-in nominal
6-in ID stainless steel casing, +1.6-85.0-ft
DTB=Depth to bottom, 105.3-ft, 14Dec90
6-in stainless steel screen, 85-105-ft, #25-slot
Fill, 105-107-ft
Borehole drilled depth: [107-ft]

Drawing By: RKL/3-01-08.ASB
Date : 12Jan94
Reference : HANFORD WELLS WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-8



WELL DESIGNATION	:	399-1-8
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 23,615 E 14,103 [Hanford Wells]
Richland		RN 55,762.1 RE 15,708.5 [24Apr87-300
Area]		
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Aug85
DEPTH DRILLED (GS)	:	107-ft
MEASURED DEPTH (GS)	:	105.3-ft, 14Dec90
DEPTH TO WATER (GS)	:	~40-ft, Aug85; 41.2-ft, 17Dec93
CASING DIAMETER	:	6-in, stainless steel, +1.6-85-ft.
ELEV TOP CASING	:	384.91-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	383.3-ft, Estimated
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	85-105-ft, #25-slot, stainless steel
COMMENTS	:	FIELD INSPECTION, 19Oct90; Stainless steel casing. 4-ft by 4-ft concrete pad, 2 posts (fixed), capped and locked, brass cap in pad with well ID. Not in radiation zone. OTHER;
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface; 11Dec90; DTB=105-ft, silty. DTW=39.7-ft, appearance good. Vadose/submerged casing clean. Screen 85-105-ft, continous wrap. Small amount of algae near bottom of screen. Water clear. The well doesn't need to be cleaned.
DATE EVALUATED	:	Feb91
EVAL RECOMMENDATION	:	1) Survey to water level measurement standards.
LISTED USE	:	300 Area monthly water level measurement 29Oct85-22Nov93;
CURRENT USER	:	WHC ES&M and ER w/l monitoring, PNL sitewide sampling and w/l monitoring 93
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method: Cable tool
Drilling Fluid Used: 300 Area Water Supply
Driller's Name: Gordon
Drilling Company: Associated Drillers
Date Started: 13Nov86

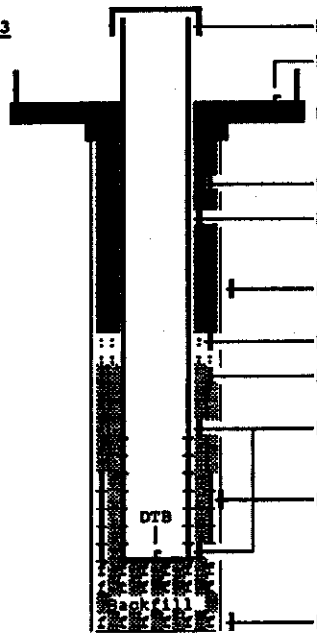
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: 0079
Company Location:
Date Complete: 22Nov86

WELL NUMBER: 399-1-10A
TEMPORARY WELL NO: S-3
Hanford Coordinates: N/S S 22,293 E/W E 14,413
State RN 57,083.8 RE 16,018.6
Coordinates: N Not documented E Not doc
Start Card #: Not documented T___ R___ S___
Elevation Ground surface: 371.94-ft Brass cap

Depth to water: 29.0-ft Nov86
(Ground surface) 29.4-ft 17Dec93

GENERALIZED Geologist's STRATIGRAPHY Log

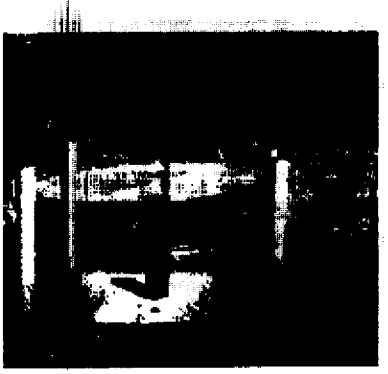
0-10: Coarse to medium SAND
10-20: Sandy GRAVEL
20-30: Silty, sandy GRAVEL
30-35: Silty, sandy PEBBLES



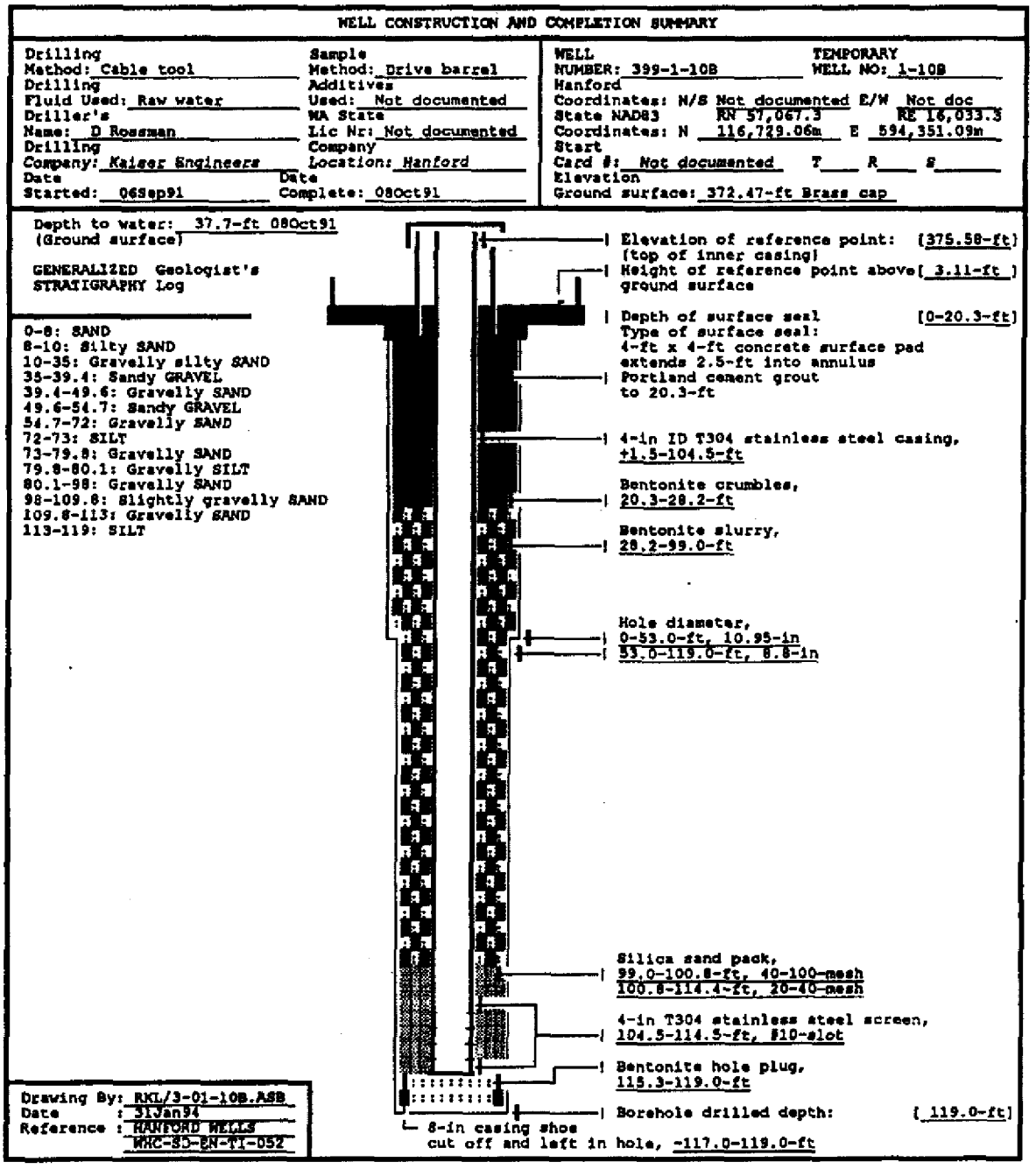
Elevation of reference point: (373.65-ft) (top of casing)
Height of reference point above ground surface (1.71-ft)
Depth of surface seal (0-13.5-ft)
Type of surface seal: Portland cement 4-ft x 4-ft x 6-in(nom) extending 3-ft into annulus.
Bentonite crumbles to 13.5-ft
6-in ID stainless steel casing, +1.7-24.5-ft
Hole diameter, 0-45.0-ft, 11-in nominal
Volclay bentonite pellets, 13.5-18.5-ft
Silica sand pack, 18.5--39.5-ft, 8-12-mesh
6-in stainless steel screen 24.5-39.5-ft, #40-slot
10-in telescoping screen, 29.5-39.5-ft
DTB-Depth to bottom, 39.1-ft, 12Feb92
Borehole drilled depth: (45.0-ft)

Drawing By: RKL/3-01-10A.ASB
Date : 12Jan94
Reference : HANFORD WELLS WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-10A



WELL DESIGNATION	:	399-1-10A
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 22,293 E 14,413 [Hanford Wells]
Richland		RN 57,083.8 RE 16,018.6 [24Apr87-300 Area]
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Nov86
DEPTH DRILLED (GS)	:	45-ft
MEASURED DEPTH (GS)	:	39.1-ft, 12Feb92
DEPTH TO WATER (GS)	:	29.0-ft, Nov86; 29.4-ft, 17Dec93
CASING DIAMETER	:	6-in, stainless steel, +1.71-24.5-ft.
ELEV TOP CASING	:	373.65-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	371.94-ft, Brass cap [24Apr87-NGS]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	24.5-39.5-ft
COMMENTS	:	FIELD INSPECTION, 31Oct89; Stainless steel casing. 4-ft by 4-ft concrete pad, 4 posts, 1 removable capped and locked, brass cap in pad with well ID. Not in radiation zone. OTHER;
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface; 12Feb92; DTB=38.7-ft, gravelly. DTW=30.2-ft, clear. Vadose casing no corrosion/scale/rust. Submerged casing not applicable. Screen 23.6-ft-not determined. Slots open. Well does not need to be cleaned.
DATE EVALUATED	:	Not applicable
EVAL RECOMMENDATION	:	Not applicable
LISTED USE	:	300 Area monthly water level measurement 29Dec86-22Nov93;
CURRENT USER	:	WHC ES&M w/l monitoring and RCRA sampling, ER w/l monitoring and sampling PNL sitewide sampling and w/l monitoring 93
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System


WELL CONSTRUCTION AND COMPLETION SUMMARY
Drilling Method: Cable tool
Drilling Fluid Used: Raw water
Driller's Name: D Rossman
Drilling Company: Kaiser Engineers
Date Started: 06Sep91
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: Not documented
Company Location: Hanford
Date Complete: 08Oct91
WELL NUMBER: 399-1-10B
TEMPORARY WELL NO: 1-10B
Hanford Coordinates: N/S Not documented E/W Not doc
State NAD83 RN 57,067.3 RE 16,033.3
Coordinates: N 116,729.06m E 594,351.09m
Start Card #: Not documented T R S
Elevation Ground surface: 372.47-ft Brass cap
Depth to water: 37.7-ft 08Oct91 (Ground surface)
GENERALIZED Geologist's STRATIGRAPHY Log
0-8: SAND
8-10: Silty SAND
10-35: Gravelly silty SAND
35-39.4: Sandy GRAVEL
39.4-49.6: Gravelly SAND
49.6-54.7: Sandy GRAVEL
54.7-72: Gravelly SAND
72-73: SILT
73-79.8: Gravelly SAND
79.8-80.1: Gravelly SILT
80.1-98: Gravelly SAND
98-109.8: Slightly gravelly SAND
109.8-113: Gravelly SAND
113-119: SILT
Elevation of reference point: [375.58-ft] (top of inner casing)
Height of reference point above ground surface [3.11-ft]
Depth of surface seal [0-20.3-ft]
Type of surface seal:
4-ft x 4-ft concrete surface pad
extends 2.5-ft into annulus
Portland cement grout
to 20.3-ft
4-in ID T304 stainless steel casing,
+1.5-104.5-ft
Bentonite crumbles,
20.3-28.2-ft
Bentonite slurry,
28.2-99.0-ft
Hole diameter,
0-53.0-ft, 10.95-in
53.0-119.0-ft, 8.8-in
Silica sand pack,
99.0-100.8-ft, 40-100-mesh
100.8-114.4-ft, 20-40-mesh
4-in T304 stainless steel screen,
104.5-114.5-ft, #10-slot
Bentonite hole plug,
115.3-119.0-ft
Borehole drilled depth: [119.0-ft]
8-in casing shoe cut off and left in hole, -117.0-119.0-ft
Drawing By: RKL/3-01-10B.ASB
Date : 31Jan94
Reference : HANFORD WELLS WHC-SD-EN-TI-052

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-10B

WELL DESIGNATION	:	399-1-10B
RCRA FACILITY	:	Not applicable
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	Not documented
		RN 57,067.3 RE 16,033.0 [08Jan92-300A]
LAMBERT COORDINATES	:	N 116,729.06m E 594,351.09M [08Jan92-NAD83]
DATE DRILLED	:	Oct91
DEPTH DRILLED (GS)	:	119.0-ft
MEASURED DEPTH (GS)	:	Not documented
DEPTH TO WATER (GS)	:	37.7-ft, 08Oct91
CASING DIAMETER	:	4-in, stainless steel, +3.11-104.5-ft;
		6-in, stainless stee, -3.1-0.5-ft
ELEV TOP CASING	:	375.58-ft, [08Jan92-NGVD'29]
ELEV GROUND SURFACE	:	372.47-ft, Brass cap [08Jan92-NGVD'29]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	104.5-114.5-ft, #10-slot, T304 stainless steel
COMMENTS	:	FIELD INSPECTION, 07Aug92
		6-in stainless steel casing.
		4-ft square concrete pad,
		4 posts, capped, locked and labeled.
		Not in radiation zone.
		OTHER:
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Not documented
DATE EVALUATED	:	Not applicable
EVAL RECOMMENDATION	:	1) Survey to water level measurement standards.
LISTED USE	:	Not documented
CURRENT USER	:	WHC ER w/l monitoring,
		PNL sitewide sampling
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

WELL CONSTRUCTION AND COMPLETION SUMMARY

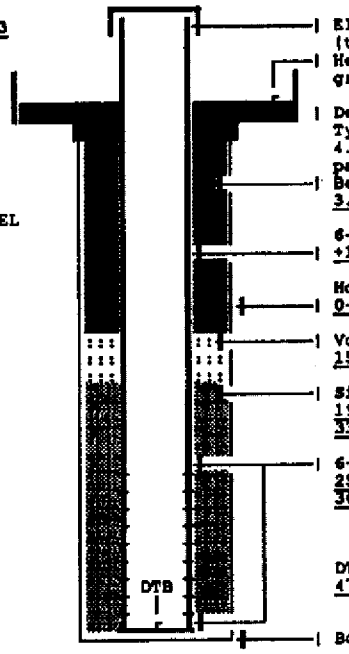
Drilling Method: Cable tool
Drilling Fluid Used: 300 Area Water Supply
Driller's Name: Corder
Drilling Company: Associated Drillers
Date Started: 17Nov86
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: 0079
Company Location:
Date Complete: 20Nov86

WELL NUMBER: 399-1-11
TEMPORARY WELL NO: S-6
Hanford Coordinates: N/S S 22,523 E/W E 13,635
State Coordinates: N Not documented E Not doc
RN 56,853.7 RE 15,240.6
Start Card #: Not documented T___ R___ S___
Elevation Ground surface: 376.18-ft Brass cap

Depth to water: 32.3-ft Nov86
(Ground surface) 33.8-ft 17Dec93

GENERALIZED Geologist's STRATIGRAPHY Log

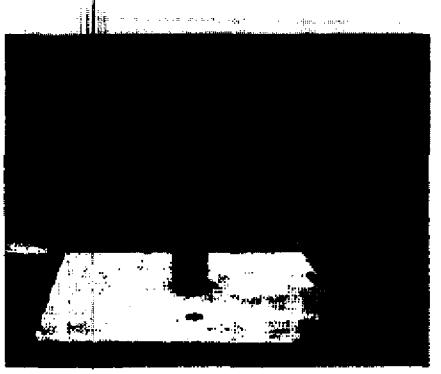
0-5: Sandy GRAVEL
5-10: SAND
10-30: Sandy GRAVEL
30-40: SAND
40-45: Silty, sandy GRAVEL
45-TD: Silty, clayey, sandy GRAVEL



Elevation of reference point: [377.79-ft] (top of casing)
Height of reference point above ground surface [1.61-ft]
Depth of surface seal [0-15.0-ft]
Type of surface seal:
4.3-ft x 4.3-ft Portland cement pad extending 3.0-ft into annulus
Bentonite crumbles, 3.0-15.0-ft
6-in ID stainless steel casing, +1.6-25.6-ft
Hole diameter, 0-47.3-ft, 11-in nominal
Volclay bentonite pellets, 15.0-19.5-ft
Silica sand pack, 19.5-33.0-ft, 10-20-mesh 33.0-47.0-ft, 8-12-mesh
6-in stainless steel screen, 25.6-36.4-ft, #20-slot 36.4-46.8-ft, #40-slot
DTB=Depth to bottom, 47.8-ft, 22May92
Borehole drilled depth: [47.3-ft]

Drawing By: RKL/3-01-11.ASB
Date : 12Jan94
Reference : HANFORD WELLS WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-11



WELL DESIGNATION	:	399-1-11
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 22,523 E 13,635 [Hanford Wells]
Richland		RN 56,853.7 RE 15,240.6 [24Apr87-300A]
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Nov86
DEPTH DRILLED (GS)	:	47.3-ft
MEASURED DEPTH (GS)	:	47.8-ft, 22May92
DEPTH TO WATER (GS)	:	32.3-ft, Nov86; 33.8-ft, 17Dec93
CASING DIAMETER	:	6-in, stainless steel, +1.61-25.6-ft.
ELEV TOP CASING	:	377.79-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	376.18-ft, Brass cap [24Apr87-NGS]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	25.6-46.8-ft
COMMENTS	:	FIELD INSPECTION, 03Nov89; Stainless steel casing. 4-ft by 4-ft concrete pad, 4 posts, 1 removable capped and locked, brass cap in pad with well ID. Located in surface radiation zone. OTHER;
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface 21May92; DTB-47.6-ft. DTW-31.8-ft, surface good. Vadose and submerged casing clean. Water clear. Screen 26.6-47.6-ft. Well casing and screen look good.
DATE EVALUATED	:	Not applicable
EVAL RECOMMENDATION	:	Not applicable
LISTED USE	:	300 Area monthly water level measurement Feb87-22Nov93,
CURRENT USER	:	WHC ER and ES&M w/l monitoring and RCRA sampling, PNL sitewide sampling and w/l monitoring 93
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method: Cable tool
Drilling Fluid Used: 300 Area Water Supply
Driller's Name: Jones
Drilling Company: Associated Drillers
Date Started: 01Dec86
Date Complete: 04Dec86

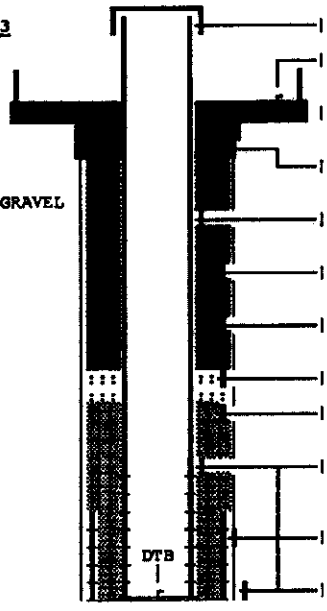
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: 1224
Company Location:

WELL NUMBER: 399-1-16A
TEMPORARY WELL NO: C-1A
Hanford Coordinates: N/S S 23,341 RN 56,035.6
E/W E 14,304 RE 15,910.1
State Coordinates: N Not documented E Not documented
Start Card #: Not documented T____ R____ S_____
Elevation Ground surface: 380.21-ft Brass cap

Depth to water: 40.0-ft Dec86
(Ground surface) 38.1-ft 17Dec93

GENERALIZED Geologist's STRATIGRAPHY Log

0-15: Silty, sandy GRAVEL
15-20: Clayey, sandy GRAVEL
20-30: Silty, sandy GRAVEL
30-35: Silty, gravelly SAND
35-45: Silty SAND with CLAY and GRAVEL
45-TD: Silty, gravelly SAND



Elevation of reference point: [381.51-ft]
(top of casing)
Height of reference point above ground surface [1.30-ft]

Depth of surface seal [0-5.0-ft]
Type of surface seal:
4-ft x 4-ft concrete surface pad
Cement to 5.0-ft

6-in ID stainless steel casing,
+1.3-32.5-ft

Bentonite crumbles,
5.0-21.0-ft

Hole diameter,
0-47.5-ft, 11-in nominal

Bentonite pellets,
21.0-24.8-ft

Silica sand pack,
24.8-47.5-ft, 10-20-mesh

6-in stainless steel screen,
32.5-47.5-ft, #20-slot

10-in telescoping screen,
37.5-47.5-ft, #40-slot

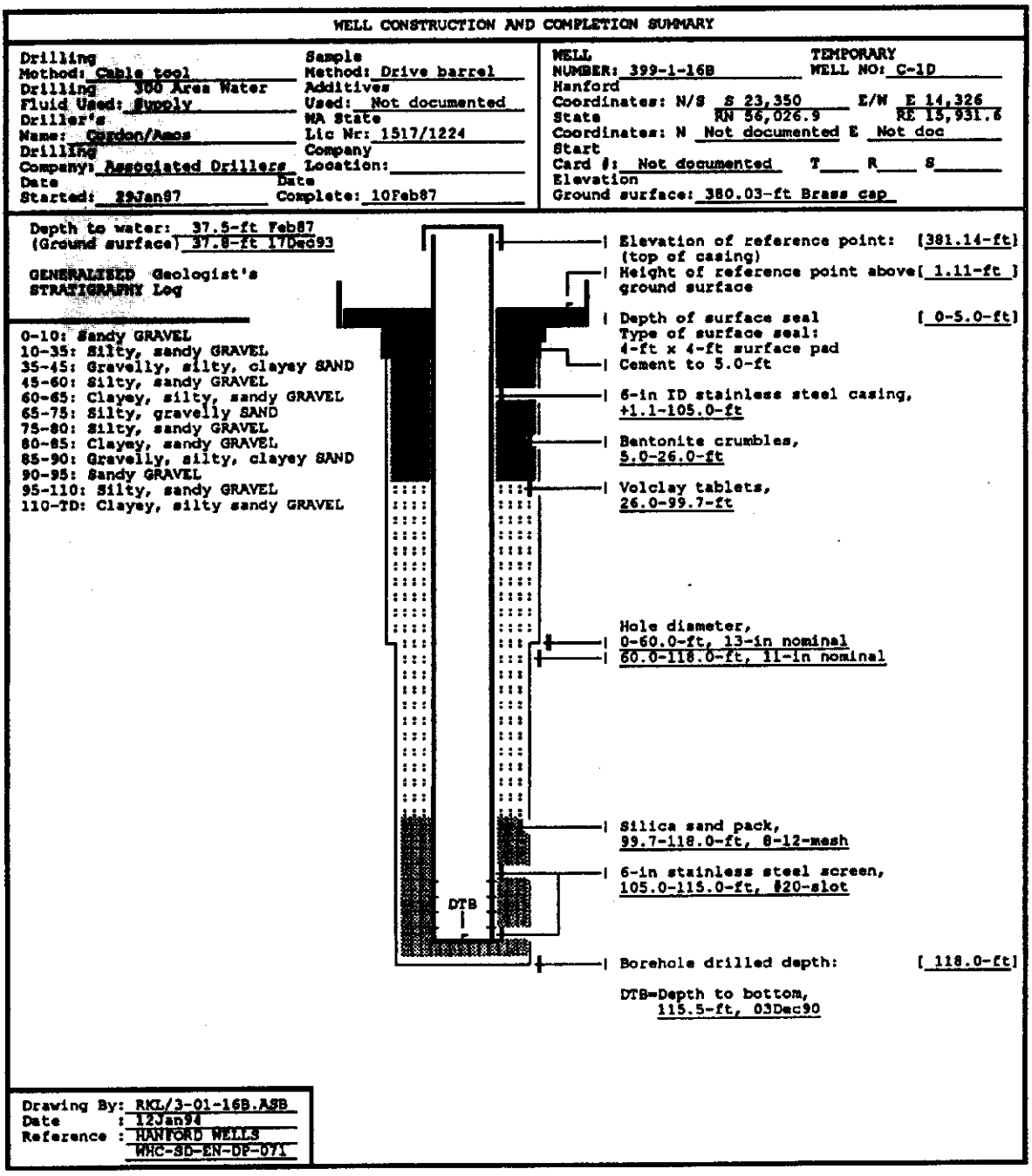
Borehole drilled depth: [47.5-ft]

DTB=Depth to bottom,
47.8-ft, 04Dec90

Drawing By: RKL/3-01-16A.ASB
Date : 12Jan94
Reference : HANFORD WELLS
WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-16A

WELL DESIGNATION	:	399-1-16A
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES Wells]	:	S 23,341 E 14,304 [Hanford
		RN 56,035.6 RE 15,910.1 [24Apr87-300
A]		
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Dec86
DEPTH DRILLED (GS)	:	47.5-ft
MEASURED DEPTH (GS)	:	47.8-ft, 04Dec90
DEPTH TO WATER (GS)	:	40-ft, Dec86; 38.1-ft, 17Dec93
CASING DIAMETER ft.	:	6-in, stainless steel, +1.30-32.5-
ELEV TOP CASING	:	381.51-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	380.21-ft, Brass cap [24Apr87-NGS]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL steel	:	32.5-47.5-ft, #40-slot, stainless
COMMENTS	:	FIELD INSPECTION, 19Oct90; Stainless steel casing. 4-ft square concrete pad, 4 posts, capped, locked and labeled. Not in radiation zone. OTHER;
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface; 16Nov90; DTB=47.2-ft, silty looking. DTW=36.4-ft, clean, no floating debris. Vadose casing clean. Screen 31.5-47.25-ft, continous wrap, looks real good. Water clear.
DATE EVALUATED	:	Feb91
EVAL RECOMMENDATION	:	1) Survey to water level measurement standards.
LISTED USE	:	*300 Area monthly water level measurement Feb87-22Nov93,*
CURRENT USER	:	WHC ES&M RCRA sampling and w/l monitoring, ER CERCLA sampling and w/l monitoring, PNL sitewide sampling and w/l monitoring 93
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System


WELL CONSTRUCTION AND COMPLETION SUMMARY
Drilling Method: Cable tool
Drilling Fluid Used: Supply 300 Area Water
Driller's Name: Gordon/Ames
Drilling Company: Associated Drillers
Date Started: 29Jan87
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: 1517/1224
Company Location:
Date Complete: 10Feb87
WELL NUMBER: 399-1-16B
TEMPORARY WELL NO: C-1D
Hanford Coordinates: N/S S 23,350 E/W E 14,326
State RN 56,026.9 RE 15,931.6
Coordinates: N Not documented E Not doc
Start Card #: Not documented T R S
Elevation Ground surface: 380.03-ft Brass cap
Depth to water: 37.5-ft Feb87
(Ground surface) 37.8-ft 17Dec93
GENERALIZED Geologist's STRATIGRAPHY Log
0-10: Sandy GRAVEL
10-35: Silty, sandy GRAVEL
35-45: Gravelly, silty, clayey SAND
45-60: Silty, sandy GRAVEL
60-65: Clayey, silty, sandy GRAVEL
65-75: Silty, gravelly SAND
75-80: Silty, sandy GRAVEL
80-85: Clayey, sandy GRAVEL
85-90: Gravelly, silty, clayey SAND
90-95: Sandy GRAVEL
95-110: Silty, sandy GRAVEL
110-TD: Clayey, silty sandy GRAVEL
Elevation of reference point: [381.14-ft] (top of casing)
Height of reference point above ground surface [1.11-ft]
Depth of surface seal [0-5.0-ft]
Type of surface seal:
4-ft x 4-ft surface pad
Cement to 5.0-ft
6-in ID stainless steel casing, +1.1-105.0-ft
Bentonite crumbles, 5.0-26.0-ft
Volclay tablets, 26.0-99.7-ft
Hole diameter, 0-60.0-ft, 13-in nominal
60.0-118.0-ft, 11-in nominal
Silica sand pack, 99.7-118.0-ft, 8-12-mesh
6-in stainless steel screen, 105.0-115.0-ft, #20-slot
DTB
Borehole drilled depth: [118.0-ft]
DTB=Depth to bottom, 115.5-ft, 03Dec90
Drawing By: RKL/3-01-16B.ASB
Date : 12Jan94
Reference : HANFORD WELLS WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-16B

WELL DESIGNATION	:	399-1-16B
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 23,350 E 14,326 [Hanford Wells]
Richland		RN 56,026.9 RE 15,931.6 [24Apr87-300A]
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Feb87
DEPTH DRILLED (GS)	:	118-ft
MEASURED DEPTH (GS)	:	115.5-ft, 03Dec90
DEPTH TO WATER (GS)	:	37.5-ft, Feb87; 37.8-ft, 17Dec93
CASING DIAMETER	:	6-in, stainless steel, +1.11-105 ft.
ELEV TOP CASING	:	381.14-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	380.03-ft, Brass cap [24Apr87-NGS]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	105-115-ft, #20-slot, stainless steel
COMMENTS	:	FIELD INSPECTION, 19Oct90; Stainless steel casing. 4-ft square concrete pad, 4 posts, capped, locked and labeled. Not in radiation zone. OTHER;
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface: 16Nov90; DTB=114.5-ft, silty and looked like a small weed on bottom. DTW=36.4-ft, clean, no floating debris. Vadose/submerged casing clean. Screen 104-114.5-ft, continous wrap, clean except for spot near the bottom. Water clear.
DATE EVALUATED	:	Feb91
EVAL RECOMMENDATION	:	1) Survey to water level measurement standards.
LISTED USE	:	300 Area monthly water level measurement Feb87-22Nov93,
CURRENT USER	:	WHC ES&M RCRA sampling and w/l monitoring, ER CERCLA sampling and w/l monitoring PNL sitewide sampling 93
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method: Cable tool
Drilling Fluid Used: 300 Area Water Supply
Driller's Name: Gordon
Drilling Company: Associated Drillers
Date Started: 08Nov86
Date Complete: 13Nov86

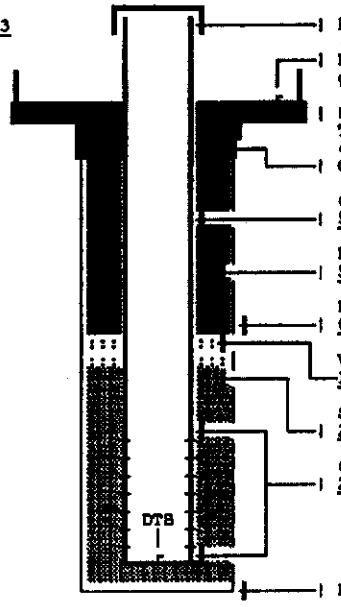
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: 0079
Company Location:

WELL NUMBER: 399-1-17A
TEMPORARY WELL NO: C-2A
Hanford Coordinates: N/S S 23,331 RN 56,045.7
E/W E 13,630 RE 15,236.2
State Coordinates: N Not documented E Not doc
Start Card #: Not documented T___ R___ S___
Elevation Ground surface: 375.13-ft Brass cap

Depth to water: 32.3-ft Nov86
(Ground surface) 33.2-ft 17Dec93

GENERALIZED Geologist's STRATIGRAPHY Log

0-10: Sandy GRAVEL
10-25: Silty, sandy GRAVEL
25-35: Silty, gravelly SAND
35-40: Silty SAND



Elevation of reference point: [377.47-ft]
(top of casing)
Height of reference point above ground surface [2.3-ft]
Depth of surface seal [0-5.0-ft]
Type of surface seal:
4-ft x 4-ft concrete pad.
Cement to 5.0-ft
6-in ID stainless steel casing, 5.0-25.0-ft
Bentonite crumbles, 5.0-19.4-ft
Hole diameter, 0-41.0-ft, 11-in nominal
Volclay bentonite pellets, 19.4-21.6-ft
Silica sand pack, 21.6-41.0-ft
6-in stainless steel screen, 25.0-40.0-ft, #40-slot
Borehole drilled depth: [41.0-ft]

DTB=Depth to bottom, 41.5-ft, 03Dec90

Drawing By: RKL/3-01-17A.ASB
Date : 12Jan94
Reference : HANFORD WELLS
WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-17A

WELL DESIGNATION	:	399-1-17A
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 23,331 E 13,630 [Hanford Wells]
Richland		RN 56,045.7 RE 15,236.2 [24Apr87-300A]
LAMBERT COORDINATES	:	Not documented
DATE DRILLED	:	Nov86
DEPTH DRILLED (GS)	:	41-ft
MEASURED DEPTH (GS)	:	41.5-ft, 03Dec90
DEPTH TO WATER (GS)	:	32-ft, Nov86; 33.2-ft, 22Nov93
CASING DIAMETER	:	6-in, stainless steel, +2.34-25-ft.
ELEV TOP CASING	:	377.47-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	375.13-ft, Brass cap [24Apr87-NGS]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	25-40-ft, #40-slot, stainless steel
COMMENTS	:	FIELD INSPECTION, 19Oct90; Stainless steel casing. 4-ft square concrete pad, 4 posts, capped, locked and labeled. Not in radiation zone. OTHER;
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface; 16Nov90; DTB=42.3-ft, silty. There was a small rock on the bottom. DTW=33.1-ft, clean, no floating debris. Vadose/submerged casing clean. Screen 26.9-42.3-ft, continous wrap, good shape and clean. Water clear, some suspended debris.
DATE EVALUATED	:	Feb91
EVAL RECOMMENDATION	:	1) Survey to water level measurement standards.
LISTED USE	:	300 Area monthly water level measurement Dec86-22Nov93,
CURRENT USER	:	WHC ES&M RCRA sampling and w/l monitoring, ER w/l monitoring PNL sitewide sampling and w/l monitoring 93
PUMP TYPE	:	Hydrostar, intake at 39.4-ft (TOC)
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

WELL CONSTRUCTION AND COMPLETION SUMMARY

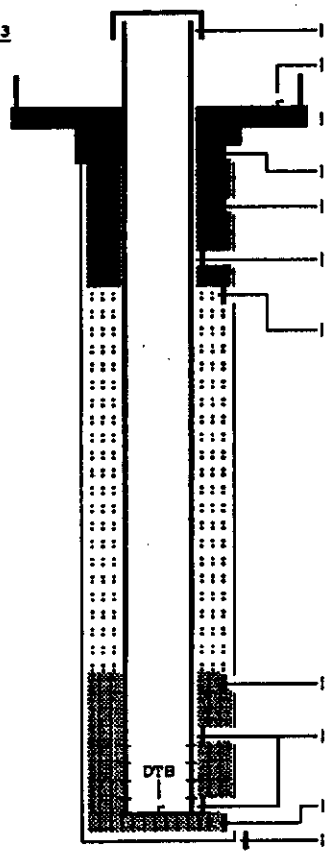
Drilling Method: Cable tool
Drilling Fluid Used: 300 Area Water Supply
Driller's Name: Cordon
Drilling Company: Associated Drillers
Date Started: 01Dec86
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: 1517
Company Location:
Date Complete: 19Dec86

WELL NUMBER: 399-1-17B
TEMPORARY WELL NO: C-2B
Hanford Coordinates: N/S S 23,317 RN 56,059.5 E/W E 13,604 RE 15,210.3
State Coordinates: N Not documented E Not doc
Start Card #: Not documented T___ R___ S___
Elevation Ground surface: 375.48-ft Brass cap

Depth to water: 32.9-ft Dec86
(Ground surface) 33.3-ft 17Dec93

GENERALIZED Geologist's STRATIGRAPHY Log

0-5: Silty SAND
5-15: Silty, sandy PEBBLES
15-25: Sandy PEBBLES
25-30: Gravelly SAND
30-35: Sandy GRAVEL
35-40: Sandy PEBBLES
40-55: Sandy GRAVEL
55-70: Silty, sandy GRAVEL
70-85: Sandy GRAVEL
85-90: Silty, sandy GRAVEL
90-95: Sandy GRAVEL
95-105: Silty, sandy GRAVEL
105-110: Silty, gravelly SAND
110-115: Sandy, gravelly CLAY

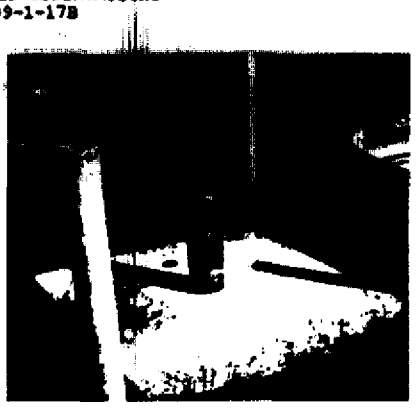


Elevation of reference point: [377.87-ft] (top of casing)
Height of reference point above ground surface [2.39-ft]
Depth of surface seal [0-4.0-ft]
Type of surface seal:
4-ft x 4-ft concrete surface pad
Cement to 4.0-ft
Bentonite crumbles, 4.0-28.0-ft
6-in ID stainless steel casing, +2.4-100.0-ft
Volclay tablets, 20.8-95.0-ft
Silica sand pack, 95.0-113.5-ft, 8-12-mesh
6-in stainless steel screen, [100.0-ft] 100-110-ft, #40-slot
Fill, 113.5-115.0-ft
Borehole drilled depth: [115.0-ft]

DTB=Depth to bottom, 110.2-ft, 03Dec90

Drawing By: RKL/3-01-17B.ASB
Date : 12Jan94
Reference : HANFORD WELLS
WHC-SD-EN-DP-071

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-17B



WELL DESIGNATION	:	399-1-17B
RCRA FACILITY	:	300 Area Process Trenches
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	S 23,317 E 13,604 [Hanford Wells]
		RN 56,059.5 RE 15,210.3 [24Apr87-NGS]
LAMBERT COORDINATES	:	N 382,020 E 2,308,989
DATE DRILLED	:	Dec86
DEPTH DRILLED (GS)	:	115-ft
MEASURED DEPTH (GS)	:	110.2-ft, 03Dec90
DEPTH TO WATER (GS)	:	33-ft, Dec86; 33.3-ft, 17Dec93
CASING DIAMETER	:	6-in, stainless steel, +2.39-100-ft
ELEV TOP CASING	:	377.87-ft, [24Apr87-NGS]
ELEV GROUND SURFACE	:	375.48-ft, Brass cap [24Apr87-NGS]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	100-110-ft, #40-slot, stainless steel
COMMENTS	:	FIELD INSPECTION, 19Oct90; Stainless steel casing. 4-ft square concrete pad, 4 posts, capped, locked and labeled. Not in radiation zone. OTHER; Documented surface seal to 4-ft.
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Depths referenced to ground surface; 16Nov90; DTB=109-ft, silty. DTW=31.2-ft, clean, no floating debris. Vadose/submerged casing clean. Screen 99-109-ft, continous wrap, clean except for one small spot near the bottom. Water clear, some suspended debris.
DATE EVALUATED	:	Feb91
EVAL RECOMMENDATION	:	1) Survey to water level measurement standards.
LISTED USE	:	300 Area monthly water level measurementFeb87-22Nov93;
CURRENT USER	:	WHC ES&M RCRA sampling and w/l monitoring, ER CERCLA sampling and w/l monitoring
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method: Cable tool
Drilling Fluid Used: Raw water
Driller's Name: G Thomas
Drilling Company: Kaiser Engineers
Date Started: 18Sep91

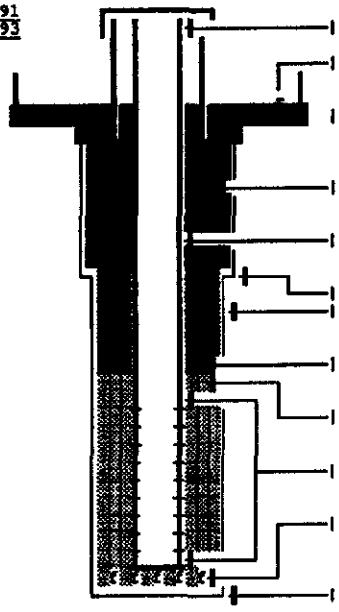
Sample Method: Drive barrel
Additives Used: Not documented
WA State Lic Nr: Not documented
Company Location: Hanford
Date Complete: 25Sep91

WELL NUMBER: 399-1-21A
TEMPORARY WELL NO: 6A
Hanford Coordinates: N/S Not documented E/W Not doc
State NAD83 Coordinates: N 116,184.18m E 594,161.02m
Start Card #: Not documented T___ R___ S___
Elevation Ground surface: 379.87-ft Brass cap

Depth to water: 36.9-ft 23Sep91
(Ground surface) 37.8-ft 17Dec93

GENERALIZED Geologist's STRATIGRAPHY Log

0-9: Gravelly SAND
9-20: Sandy GRAVEL
20-24.5: Gravelly SAND
24.5-54.6: Sandy GRAVEL



Elevation of reference point: [382.39-ft]
(top of inner casing)
Height of reference point above ground surface [2.52-ft]
Depth of surface seal [0-19.0-ft]
Type of surface seal:
4-ft x 4-ft concrete surface pad extending 1-ft into annulus
Cement grout to 19.0-ft
4-in ID T304 stainless steel casing, +2.5-31.4-ft
Hole diameter,
0-19.9-ft, 10.95-ft
19.9-54.6-ft, 9.8-in
Bentonite crumbles,
19.0-29.1-ft
Silica sand pack,
29.1-52.4-ft, 20-40-mesh
4-in T304 stainless steel screen,
31.4-52.2-ft, #10-slot
Fill,
52.4-54.6-ft
Borehole drilled depth: [54.6-ft]

Drawing By: RKL/3-01-21A.ASB
Date : 31Jan94
Reference : HANFORD WELLS
WHC-SD-EN-TI-052

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 399-1-21A

WELL DESIGNATION	:	399-1-21A
RCRA FACILITY	:	Not applicable
CERCLA UNIT	:	300-FF-5
HANFORD COORDINATES	:	Not documented
LAMBERT COORDINATES	:	N 116,184.18m E 594,161.02M [08Jan92-NAD83]
DATE DRILLED	:	Sep91
DEPTH DRILLED (GS)	:	54.6-ft
MEASURED DEPTH (GS)	:	Not documented
DEPTH TO WATER (GS)	:	36.9-ft, 23Sep91; 37.8-ft, 17Dec91
CASING DIAMETER	:	4-in, stainless steel, +2.52-31.4-ft; 6-in, stainless stee, -2.5-0.5-ft
ELEV TOP CASING	:	382.39-ft, [08Jan92-NGVD'29]
ELEV GROUND SURFACE	:	379.87-ft, Brass cap [08Jan92-NGVD'29]
PERFORATED INTERVAL	:	Not applicable
SCREENED INTERVAL	:	31.4-52.2-ft, #10-slot, T304 stainless steel
COMMENTS	:	FIELD INSPECTION, 20Oct93; 6-in stainless steel casing. 4-ft by 4-ft concrete pad, 4 posts, 1 removable. Capped and locked, brass cap in pad with well ID. Not in radiation zone. OTHER:
AVAILABLE LOGS	:	Geologist
TV SCAN COMMENTS	:	Not documented
DATE EVALUATED	:	Not applicable
EVAL RECOMMENDATION	:	Not documented
LISTED USE	:	300 Area monthly water level measurements, 28Apr93-17Dec93;
CURRENT USER	:	WHC ES&M w/l monitoring, ER sampling and w/l monitoring, PNL w/l sitewide sampling
PUMP TYPE	:	Hydrostar
MAINTENANCE	:	Maintenance activities documented in the Hanford Wells Database System

Appendix D

Letter from Ecology to DOE Regarding the *Statistical Assessment for the 300 Area RCRA Groundwater Monitoring Plan*

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

May 7, 2001

Mr. Marvin Furman
U.S. Department of Energy
Richland Operations Office
P.O. Box 550, MSIN A5-13
Richland, Washington 99352

Dear Mr. Furman:

Re: Statistical Assessment for the 300 Area Resource Conservation and Recovery Act of 1976 (RCRA) Ground Water Monitoring Plan

The Washington State Department of Ecology (Ecology) has evaluated the proposal presented by the United States Department of Energy (USDOE) requesting "variance" from applying interim status regulations at B-Pond and other Treatment, Storage, and Disposal (TSD) units, and their request to apply the Shewhart-CUSUM control limits for the 300 Area Process Trenches (APT). The purpose of this letter is to present regulatory guidance regarding the proposed "variance" from applying interim status regulations and to denote the requirements for achieving acceptable control limits for the 300 APT. This letter does not negate the current status of the site, but allows for variance.

B-Pond - "Variance" from applying interim status regulations. The following guidance is provided to the USDOE regarding the request for "variance" from applying interim status regulations for the RCRA monitoring network at B Pond monitored under interim indicator evaluation status. The appropriate indicators of ground-water contamination and statistical evaluation methods will be proposed by Pacific Northwest National Laboratory (PNNL) and submitted for approval by Ecology on a case-by-case basis.

The following criteria must be met prior to receiving approval of a variance from applying interim status regulations.

1. Identification of appropriate indicators of ground-water contamination and suitable statistical evaluation methods will be achieved by utilizing best professional judgement (i.e., waste source terms, conceptual models), expertise, and site-specific knowledge to: (a) determine the best technical approach based on hydrogeology and (b) tailor statistical approach to each individual site as necessary (i.e., consider type of monitoring, the nature of the data, the proportions of non-detects, spatial and temporal variations in the selection of appropriate statistical methods). A list of the appropriate indicators will be provided to Ecology for approval prior to implementation of the proposed plan.

2. The selection of quality background data and data sets for identification of an appropriate baseline period. Once baseline data has been obtained, outliers will be properly addressed to avoid substantial bias in the statistical analysis.

3. American Society for Testing and Materials (ASTM) guidance will be utilized for circumstances regarding non-detects and outliers.

4. The utilization of probability plots in order to maintain normal distribution of data.

5. Input parameter values (e.g., k, h, and SCL) will be proposed and submitted to Ecology for approval prior to implementation of this plan.

6. Variance from applying interim status requirements for the RCRA monitoring network at B Pond and other TSD units currently monitored under interim indicator evaluation status will be allowed for a period to cover four sampling events. Upon completion of the four sampling events and statistical evaluation of the data, the submitted proposal shall be reevaluated by Ecology for subsequent approval.

300 Area Process Trenches (300-APT) – Calculation of control limits. The following table depicts the control limits and special conditions to be applied for each constituent of concern at the 300-APT as proposed in the USDOE/Ecology meeting held December 11, 2000.

Table 1. Summary of Various Control Limits at the 300 APT

Constituent of Concern	Shewhart CUSUM Parameter Value	Control Limit (µg/L)
Well # 3-1-16A		
cis-DCE (µg/L)	4.5	0.803
TCE (µg/L)	4.5	1.72
Well # 3-1-16B		
cis-DCE (µg/L)	4.5	[39, 262][b]
TCE (µg/L)	NA	5
Well # 3-1-17A		
Uranium (µg/L)	4[a]	[7, 218]
Well # 3-1-17B		
Uranium (µg/L)	4.5	0.67

[a] Use 4 sigma because there are 16 data points in the baseline period (ASTM 1996).
[b] Numbers in brackets indicate upper and lower limits.

Specific procedures to be used are as follows:

1. For wells where the Maximum Contamination Level (MCL) has been and still is exceeded, quarterly monitoring will be conducted. One sample will be collected from each well during each sampling event and compared to the agreed upon control limits for each identified constituent of concern (i.e., cis-DCE, TCE, and uranium). If a control limit is exceeded (proof by verification sampling), a notification process will be followed.

2. For wells where the MCL has not been exceeded, semiannual monitoring will be conducted. One sample will be collected from each well during each sampling event and compared to the agreed upon control limits for each identified constituent of concern (i.e., cis-DCE, TCE, and uranium). A notification process will be followed after a confirmed exceedance (by verification sampling).

3. Currently tetrachloroethene (PCE) is not detected in the 300 APT wells. However, it has been detected in the past. PNNL will continue to monitor PCE and report detected results.

The proposed statistical approach shall be in effect for a period of two years or four sampling events. Based on the results of this trial application, Ecology would decide whether to continue, modify, or abandon the proposed approach in these facilities or to apply the approach to other facilities. The USDOE is therefore requested not to apply this variance or similar procedures/methods at other facilities with out Ecology's prior approval.

If further discussion is necessary, please contact Deborah Singleton at (509) 736-5722 or me at (509) 736-3015.

Sincerely,

Dib Goswami, PhD
Nuclear Waste Program

DG:lkd

cc: Doug Hildebrand, USDOE
John Morse, USDOE
Charissa Chou, PNL
Stuart Luttrell, PNL

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8.0 POSTCLOSURE PLAN

8.1 INSPECTION PLAN

This section describes compliance monitoring activities, security equipment, and inspections for well conditions during a period of modified closure compliance monitoring. Table 8-1 lists the inspection items and the inspection frequency for the postclosure care period. These inspections may be implemented in checklist form. Such a checklist could specify entering checklist performance and results in the appropriate inspection logbook.

8.1.1 Security Control Devices

Each of the groundwater monitoring wells has a locked cap to prevent unauthorized access and is surrounded by four steel guard posts for visibility to prevent damage from vehicles. The overall well condition, locks, guard posts, and pumps will be inspected during each sampling event. Problems and/or damage will be noted on well inspection forms for tracking of repairs.

8.1.2 Well Condition

Inspection of groundwater monitoring wells will be conducted pursuant to Permit Condition II.F and carried out under internal procedure BHI-EE-01 (BHI 1995) or equivalent guidance. This procedure calls for a surface inspection of a well at each sampling event. The procedure also calls for a subsurface inspection of the well at a minimum of every 3 to 5 years. This routine subsurface inspection may consist of pulling and inspecting the pump, brushing the inner walls of the casing and screen, and conducting a down-hole television survey.

8.2 MAINTENANCE PLAN

This section provides a plan for maintenance of the unit during the compliance monitoring period required for modified closure. Elements of this maintenance plan include repair of security devices, and well replacement. The maintenance plan is based on observations made and recorded in the well inspection form during site inspections. Except where immediate action is required, maintenance action will be initiated within 90 days of inspection and discovery.

8.2.1 Repair of Security Control Devices

The responsible maintenance organization will be notified of any problems to the well locks or guard posts and/or problems noted in the well inspection form during inspections and/or well monitoring activities. Well repairs will be made as soon as possible after notification of damage. Repairs to the four steel guard posts at each monitoring well will be made before the following inspection period and tracked on well inspection forms to completion.

8.2.2 Well Replacement

Maintenance of groundwater monitoring wells will be carried out under internal procedure BHI-EE-01 (BHI 1995) or equivalent guidance. This procedure covers correction of problems found during routine inspection or that manifest themselves at other times. If field maintenance procedures are inadequate to solve problems identified during site inspection, management will decide whether to repair or replace the well.

Where monitoring well damage requires modification of the groundwater monitoring program, the monitoring plan will be amended in accordance with WAC 173-303-610 (8)(d).

8.3 PERSONNEL TRAINING

This section describes the training of personnel required to maintain the 300 APT in a safe and secure manner during postclosure care as required by 40 CFR 265.16, WAC 173-303-330, and Condition II.C. of the Hanford Facility Dangerous Waste Permit.

8.3.1 *Outline of the Training Program*

This section outlines the introductory and continuing training programs necessary to conduct the postclosure activities at the 300 APT in a safe manner. This section also includes a brief description of how training will be designed to meet job tasks as required in 40 CFR 265.16(a).

Surveillance Personnel: The following outline provides information on classroom and on-the-job training that surveillance personnel will complete before conducting independent site surveillance at the 300 APT:

- Security inspections
- Location, integrity, and inspection of groundwater wells.

8.3.2 Job Description

This section provides the job description(s) for postclosure activities at 300 APT as required by 40 CFR 265.16(d)(1) and WAC 173-303-330(2)(a).

Site Surveillance: Personnel with training in the following areas will conduct the inspections:

- Control devices
- Damage

8.3.3 *Training Content, Frequency, and Techniques*

The training of personnel requires the following job-specific training areas, as appropriate.

- **Emergency Preparedness Training**: This training will include a review of emergency procedures that consists of listening to standard emergency signals, and reporting procedures.

- **The RCRA Groundwater Monitoring Scope, Organization, and Quality Assurance Plan**: This training will include the documentation requirements included in the chain of custody to the laboratory, how to correct mistakes made on field data sheets, and any applicable manifests or shipping orders required for shipping samples to the laboratory.

- ***Groundwater Field Sampling Procedures***: *This training will include pump description and* operation of the three types of pumps (used by the field personnel), operational procedures for the generators and the pumps used to gather groundwater samples, and special requirements for collecting and packaging samples containing volatile organic materials that require acid preservatives or special filtering. Training also will be given in the areas of field data record preparation and chain of custody to the laboratory.

- **Site Security Inspections:** Personnel will be instructed on how to inspect for obvious signs of a security breach. Signs may include downed barricades.

- **Location, Integrity, and Inspection of Groundwater Wells:** Personnel will be shown the locations of the groundwater wells and instructed on how to inspect the cap and casing of each well to ensure that it is locked.

8.3.4 Training for Emergency Response

This section will demonstrate that personnel conducting postclosure activities at the 300 APT have been fully trained to respond effectively to emergencies and are familiar with emergency procedures and equipment. In addition, hazardous waste site operation training will be provided in accordance with 29 CFR 1910.120.

- **Response to Fires:** The 300 APT will have no existing structures and may be covered with a soil cover. As such, there is no need for fire equipment. However, if personnel are at the unit when a brushfire breaks out, they will notify the Hanford Fire Department.

- **Response to Groundwater Contamination:** Based on the current groundwater monitoring program, groundwater contamination beneath the 300 APT does not constitute an emergency situation, nor will it become so as a result of closure. Therefore, emergency response training in this regard is not warranted at this time.

8.3.5 Implementation of Training Program

Surveillance personnel will undergo the required training programs outlined in Section 8.5.1 as they pertain to monitoring requirements. Surveillance personnel will not be allowed to perform inspections at the 300 APT until the required training programs have been completed.

Table 8-1. Inspection Schedule for the 300 Area Process Trenches.

Inspection Item	Inspection Frequency
Security control devices: well caps, and locks	Quarterly
Well condition	Semiannually
Subsurface well condition	3 to 5 years

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3
4
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Hanford Facility RCRA Permit Modification Notification Forms

Part VI, Chapter 2 and Attachment 37

183-H Solar Evaporation Basins

Index

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 183-H Solar Evaporation Basins	**Permit Part & Chapter:** Part VI, Chapter 2 and Attachment 37

Description of Modification:

Hanford Facility RCRA Permit, LIST OF ATTTACHMENTS

Attachment 37:

Attachment 37 183-H Solar Evaporation Basins, and approved modifications ~~Post-Closure Plan, DOE/RL-97-48, Revision 0, June 1997~~

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
N. C. Boyter 6.14.02 Date	M. S. McCormick 6/24/02 Date	J. B. Price Date	L.E. Ruud Date

[1]Class 1 *modifications requiring prior Agency approval.*

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 183-H Solar Evaporation Basins	**Permit Part & Chapter:** Part VI, Chapter 2 and Attachment 37

Description of Modification:

Hanford Facility RCRA Permit, VI.2.A

CHAPTER 2
183-H Solar Evaporation Basins

VI. 2. A. COMPLIANCE WITH APPROVED MODIFIED CLOSURE PLAN

The Permittees shall comply with all requirements set forth in Attachment 37, including Conditions specified in VI.2.B. Enforceable portions of the permit application have been incorporated in Attachment 37 and are identified as follows. All sections, figures, and tables included in these portions are also enforceable. ~~The 183-H Solar Evaporation Basins (Basins) comprise an inactive TSD unit that is currently undergoing closure activities. This TSD unit was operated as an evaporation treatment unit for dangerous wastes. This Chapter sets forth the closure requirements for this TSD unit. The following enforceable portions of the *183-H Solar Evaporation Basins Post-Closure Plan*, Rev. 0 (Plan), found in Attachment 37 supersede the *183-H Solar Evaporation Basins Closure Plan/Post-Closure Plan*, found in Attachment 11 which was previously listed in Part V, Chapter 1.~~

~~VI. 2. A. COMPLIANCE WITH APPROVED MODIFIED CLOSURE PLAN~~

~~The requirements are set forth in Attachment 37. Enforceable portions of the Plan are listed below; all subsections, figures, and tables included in these portions are also enforceable, unless stated otherwise:~~

~~Part A, Form 3, Permit Application, Revision 4, June 1994~~

ATTACHMENT 37, ~~183-H Solar Evaporation Basins Post-Closure Plan, Rev. 0~~

Chapter 1.0 Part A, Form 3, Rev. 4 from Class 1 modification for quarter ending June 30, 2002

Chapter 2.0 ~~Section 2.1~~ Modified Post-Closure Institutional Controls and ~~Section 2.2 Modified~~ Post-Closure Periodic Assessments

Chapter 3.0 ~~Section 3.0~~ Ground Water Monitoring During Post-Closure

~~Section 3.1 WAC 173-303-645(11)(d) Monitoring Requirements~~

~~Section 3.1.1 WAC 173-303-645(3) Ground Water Protection Standard~~

~~Section 3.1.2 WAC 173-303-645(8) General Ground Water Monitoring Requirements~~

~~Section 3.2 RCRA Corrective Action Ground Water Monitoring Schedule~~

~~Section 3.3 Ground Water Monitoring under CERCLA~~

~~Section 3.3.1 100-HR-3 Remedial Investigation Monitoring~~

~~Section 3.3.2 100-HR-3 Interim Remedial Measure Monitoring~~

~~Section 3.4 Inspection, Maintenance, and Replacement of Wells~~

Chapter 4.0 ~~Section 4.0~~ Corrective Action Plan

~~Section 4.1 Soil Column Corrective Action~~

~~Section 4.2 Groundwater Corrective Action~~

~~Section 4.3 Remediation Expectations During the Interim Remedial Measure (IRM)~~

Chapter 5.0 ~~Section 5.0~~ Personnel Training During Post-Closure

Chapter 6.0 ~~Section 6.0~~ Security

Chapter 7.0 ~~Section 7.0~~ Closure Contact

Chapter 8.0 ~~Section 8.0~~ Certification of Post-Closure

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
N C Boyter 6.14.02	Date	M. S. McCormick 6/21/02	Date	J. B. Price	Date	L.E. Ruud	Date
N. C. Boyter		M. S. McCormick		J. B. Price		L.E. Ruud	

[1] *Class 1 modifications requiring prior Agency approval.*

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
183-H Solar Evaporation Basins	Part VI, Chapter 2 and Attachment 37

Description of Modification:

Hanford Facility RCRA Permit, VI.2.B:

VI.2.B. AMENDMENTS TO THE APPROVED POST-CLOSURE PLAN

VI.2.B.a. The Permittee will review the modified closure option in five (5) years (February 28, 2003). The purpose of the review will be to determine if this TSD unit can be clean closed.

~~VI.2B.b. Ground Water Monitoring Plan for the 183-H Solar Evaporation Basins, PNNL-11573. The Permittees shall comply with the above-referenced document, which details the final status Ground Water Monitoring Program for the 183-H Solar Evaporation Basins.~~

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
N C Boyter 6.14.02	Dan Robert for 6/24/02		
N. C. Boyter Date	M. S. McCormick Date	J. B. Price Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 183-H Solar Evaporation Basins	**Permit Part & Chapter:** Part VI, Chapter 2 and Attachment 37

Description of Modification:

Attachment 37, Part A, Form 3:

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Owner/Operator
Keith A. Klein ~~John D. Wagoner~~, Manager
U.S. Department of Energy
Richland Operations Office
~~6/30/94~~
Date

Co-Operator
E. Keith Thomson ~~Edward S. Keen~~, President
Fluor Hanford ~~Bechtel Hanford, Inc.~~
~~6/30/94~~
Date

Modification Class: [1] [2] [3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
		X		

Relevant WAC 173-303-830, Appendix I Modification: A.7.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
7. Changes in ownership or operational control of a facility

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
N C Boyter 6.14.02		Ann Robertson for 6/20/02					
N. C. Boyter	Date	M. S. McCormick	Date	J. B. Price	Date	L.E. Ruud	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 183-H Solar Evaporation Basins	**Permit Part & Chapter:** Part VI, Chapter 2 and Attachment 37

Description of Modification:

Attachment 37, Part A, Form 3: Updated figures and drawings.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
N. C. Boyter Date 6.14.02	M. S. McCormick Date 6/24/02	J. B. Price Date	L.E. Ruud Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit:	**Permit Part & Chapter:**
183-H Solar Evaporation Basins	**Part VI, Chapter 2 and Attachment 37**

Description of Modification:

Attachment 37, Chapter 5.0:

5.0 PERSONNEL TRAINING DURING POSTCLOSURE

This section describes the training of the groundwater sampling and analysis task leader and sampling personnel required to complete postclosure care requirements as contained in this postclosure plan. ~~Organizations responsible for sampling and analysis of groundwater (or an equivalent organization should a reorganization occur within DOE-RL contractors performing this work) are given in parentheses after the responsibilities described below~~. The sampling and analysis task leader or delegate and samplers will be responsible for:

- Monitoring and recordkeeping on groundwater well security and maintenance ~~(Bechtel Hanford, Inc. Groundwater Project)~~
- Network design changes and coordination of sampling ~~(Pacific Northwest National Laboratories, Field Hydrology Chemistry)~~
- Collecting groundwater level data ~~(Rust Federal Services Northwest, Well Services)~~
- Collecting , packaging, and shipping groundwater samples to field and offsite laboratories ~~(Rust Federal Services Northwest, Well Services)~~
- Sampling and monitoring equipment operation and maintenance ~~(Rust Federal Services Northwest, Well Services)~~
- Providing sample chain of custody to the laboratory ~~(Rust Federal Services Northwest, Well Services)~~.

The training of the sampling and analysis task leader and sampling personnel will receive either classroom instruction or on-the-job training. Sampling and analysis personnel will be trained to perform these functions ~~in accordance with the *Hanford Analytical Services Quality Assurance Requirements Documents* (DOE-RL 1996e)~~. A person successfully completing the required training courses will be qualified as a groundwater sampler and/or task leader. All personnel will undergo training and at least an annual review for required course.

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
N. C. Boyter	Date 6-14-02	M. S. McCormick	Date 6/14/02	J. B. Price	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 183-H Solar Evaporation Basins	**Permit Part & Chapter:** Part VI, Chapter 2 and Attachment 37

Description of Modification:

Attachment 37, Chapter 7.0:

7.0 CLOSURE CONTACT

The RL will be the official contact for 183-H Solar Evaporation Basins during the postclosure period at the following address:

Director, Regulatory Compliance and Analysis Division ~~Environmental Assurance, Permits, and Policy Division~~*
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

*or its equivalent should there be a future reorganization at RL.

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
N. C. Boyter 6.14.02	M. S. McCormick 6/24/02	J. B. Price	L.E. Ruud
Date	Date	Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modifications

Part VI, Chapter 2 and Attachment 37

183-H Solar Evaporation Basins

Replacement Sections

Index

CONTENTS

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FORM 3	DANGEROUS WASTE PERMIT APPLICATION	I. EPA/State I.D. No.
		W A 7 8 9 0 0 0 8 9 6 7

OR OFFICIAL USE ONLY

Application Approved	Date Received (month/ day / year)	Comments

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or If this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. First Application (place an "X" below and provide the appropriate date)

☐ **1. Existing Facility** (See instructions for definition of "existing" facility. Complete item below.)

MO	DAY	YEAR
03	22	1943

*For existing facilities, provide the date (mo/day/yr) operation began or the date construction commenced. (use the boxes to the left)

*The date construction of the Hanford Facility commenced

☐ **2. New Facility** (Complete item below.)

MO	DAY	YEAR

For new facilities, provide the date (mo/day/yr) operation began or is expected to begin

B. Revised Application (Place an "X" below and complete Section I above)

☒ **1. Facility has an Interim Status Permit**

☒ **2. Facility has a Final Permit**

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. Process Code – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the codes(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).

B. Process Design Capacity – For each code entered in column A enter the capacity of the process.

1. Amount – Enter the amount.

2. Unit of Measure – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
STORAGE:		
Container (barrel, drum, etc.)	S01	Gallons or liters
Tank	S02	Gallons or liters
Waste pile	S03	Cubic yards or cubic meters
Surface impoundment	S04	Gallons or liters
	S06	Cubic yards or cubic meters*
DISPOSAL:		
Injection well	D80	Gallons or liters
Landfill	D81	Acre-feet (the volume that would cover one acre to a Depth of one foot) or hectare-meter
Land application	D82	Acres or hectares
Ocean disposal	D83	Gallons per day or liters per day
Surface impoundment	D84	Gallons or liters
TREATMENT:		
Tank	T01	Gallons per day or liters per day
Surface impoundment	T02	Gallons per day or liters per day
Incinerator	T03	Tons per hour or metric tons per hour; gallons per hour or liters per hour
Other (use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	Gallons per day or liters per day

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	G	Liters Per Day	V	Acre-Feet	A
Liters	L	Tons Per Hour	D	Hectare-Meter	F
Cubic Yards	Y	Metric Tons Per Hour	W	Acres	B
Cubic Meters	C	Gallons Per Hour	E	Hectares	Q
Gallons Per Day	U	Liters Per Hour	H		

III. PROCESS – CODES AND DESIGN CAPACITIES (continued)

Example for Completing Section III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

Line No.	A. Process Code *(from list above)*			B. Process Design Capacity				For Official Use Only			
				1. Amount *(Specify)*		2. Unit of Measure *(enter code)*					
X-1	S	0	2	600		G					
X-2	T	0	3	20		E					
1	S	0	2	2,167,000		G					
2	T	0	1	700		U					
3											
4											
5											
6											
7											
8											
9											
10											

C. Space for additional process codes or for describing other process (code "T04"). For each process entered here include design capacity.

S02, T01

The 183-H Solar Evaporation Basins were used for the storage and treatment of mixed waste generated in the N Reactor fuels fabrication facilities. In addition, nonradioactive dangerous waste was discharged to the basins on a nonroutine basis. These deactivated water treatment basins received a maximum of approximately 400,000 gallons (1,514,160 liters) of waste a year. The basins had a tank treatment design capacity of 700 gallons (2,650 liters) of waste a day treated by evaporation and a tank storage design capacity of 2,167,000 gallons (8,202,960 liters), a collective value representing all four basins. The basins have not received waste since November 1985. Closure activities have been completed and postclosure groundwater monitoring is being conducted.

IV. DESCRIPTION OF DANGEROUS WASTES

A. Dangerous Waste Number – Enter the digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four-digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. Estimated Annual Quantity - For each listed waste entered in column A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. Unit of Measure - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate odes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
Pounds	P	Kilograms	K
Tons	T	Metric Tons	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. Processes

1. Process Codes:

   For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

   For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. Process Description: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

   NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

   1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
   2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
   3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

   Example for completing Section IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste.

Line No.	A. Dangerous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*	D. Processes	
				1. Process Codes *(enter)*	2. Process Description *(If a code is not entered in D(1))*
X-1	K 0 0 4	900	P	T03 D80	
X-2	D 0 0 2	200	P	T03 D80	
X-3	D 0 0 1	100	P	T03 D80	
X-4	D 0 0 2			T03 D80	Included with above

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number *(enter from page 1)*
W A 7 8 9 0 0 0 8 9 6 7

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*	D. Processes	
				1. Process Codes *(enter)*	2. Process Description *(if a code is not entered in D(1))*
1	W T 0 1	3,600,000	P	S02 T01	Tank Storage/Evaporation
2	D 0 0 7		P	S02 T01	Tank Storage/Evaporation
3	U 1 2 3		P	S02 T01	Tank Storage/Evaporation
4	P 0 2 9		P	S02 T01	Tank Storage/Evaporation
5	P 0 3 0		P	S02 T01	Tank Storage/Evaporation
6	P 0 9 8		P	S02 T01	Tank Storage/Evaporation
7	P 1 0 6		P	S02 T01	Tank Storage/Evaporation
8	P 1 2 0		P	S02 T01	Tank Storage/Evaporation
9					
10					
11					
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42					

IV. DESCRIPTION OF DANGEROUS WASTE (continued)

E. Use this space to list additional process codes from Section D(1) on page 3.

The 183-H Solar Evaporation Basins received mixed waste. This waste consisted primarily of neutralized acid process waste that was designated Extremely Hazardous Waste (EHW) because of toxicity (WT01). The basins also received various nonradioactive waste (listed discarded chemical products), resulting in designation for cyanides (P030), vanadium penoxide (P120), and formic acid (U123). Approximately 3,600,000 pounds (1,632,000 kilograms) of waste a year was treated. Additionally, Basin No. 2 liquid was designated EP Toxic because of the presence of chromium (D007).

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS Refer to attached photograph(s).

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos.

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information," place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. Name of Facility's Legal Owner	2. Phone Number *(area code & no.)*

3. Street or P.O. Box	4. City or Town	5. St.	6. Zip Code

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name *(print or type)*	Signature	Date Signed
Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office		7/1/02

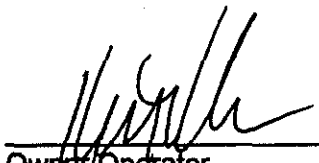
X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name *(Print Or Type)*	Signature	Date Signed
See attachment		

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



7/1/02

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

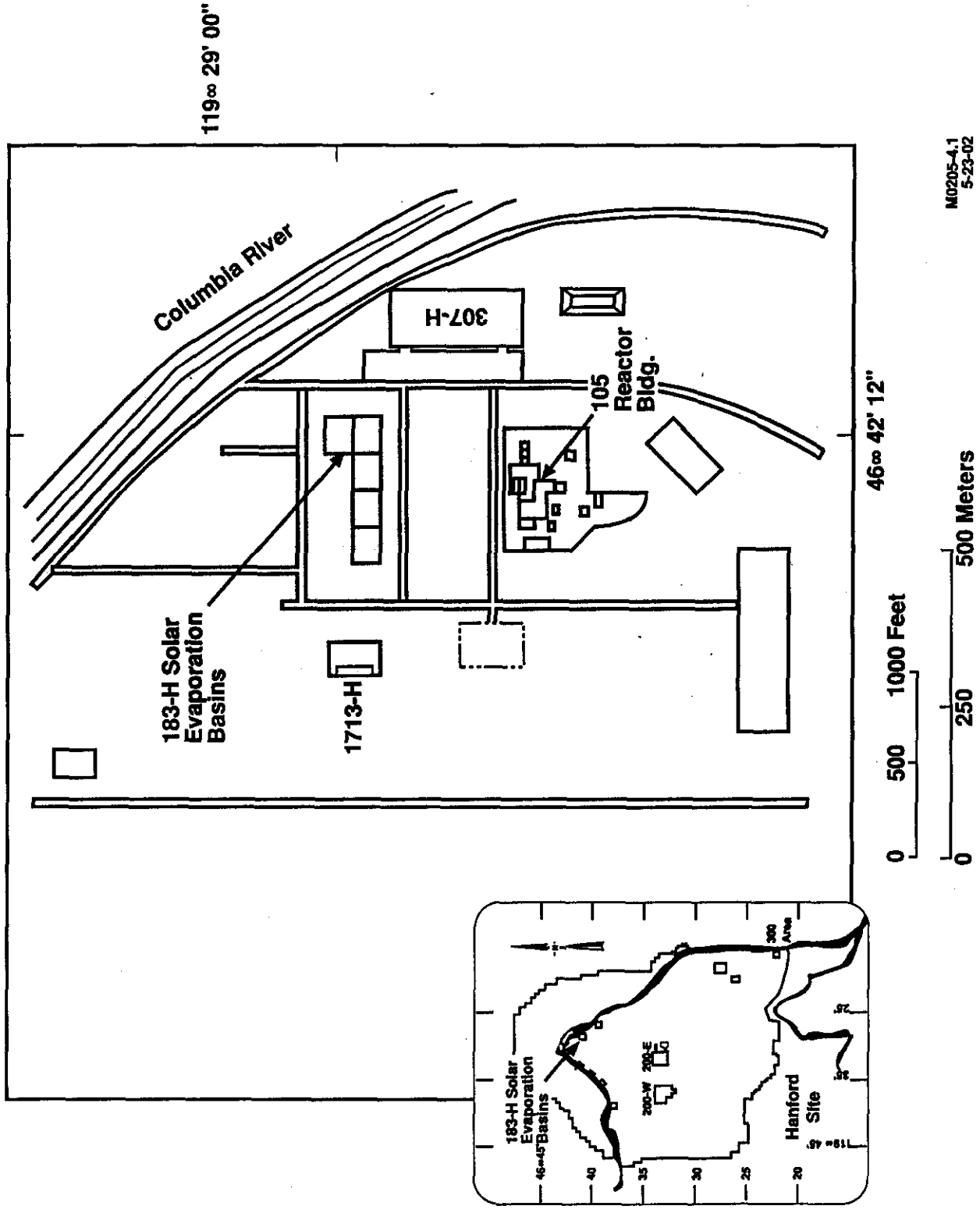
Date

5-30-02

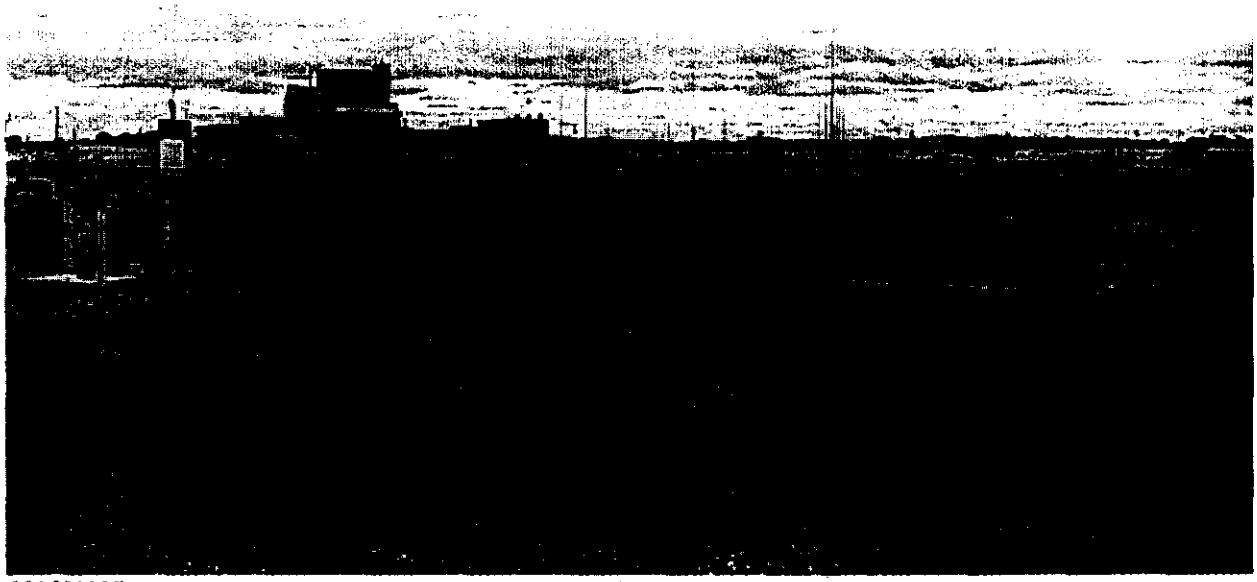
Co-operator
E. Keith Thomson
President and Chief Executive Officer
Fluor Hanford

Date

100-H AREA/183-H SOLAR EVAPORATION BASINS SITE PLAN



100-H AREA
183-H SOLAR EVAPORATION BASIN



46°42'12"
119°29'0"

(PHOTO TAKEN 2002)

CONTENTS

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2.0 MODIFIED POSTCLOSURE INSTITUTIONAL CONTROLS AND PERIODIC ASSESSMENTS

2.1 INSTITUTIONAL CONTROLS

No direct exposure contamination remains at 183-H. The extent of contamination remaining at the time of closure of this unit extended from deep vadose zone soils (4.6 m[15 ft] below the bottom of the basin structure) to and including saturated soils and groundwater. Therefore, no measures are required to limit or prohibit activities at the surface. For example, fences or barriers are not required for maintaining access restrictions.

Institutional controls are required to be maintained in order to ensure that groundwater is not used as a drinking water or irrigation source. Because RL will maintain control over this site for the foreseeable future and potentially until the groundwater is remediated, it is not anticipated that additional actions will be required to limit controls over groundwater usage. Should groundwater use restrictions be required after RL relinquishment of the area, appropriate deed restrictions will be made.

2.2 PERIODIC ASSESSMENTS

Periodic assessments are required by Permit Condition II.K.3.b. The first periodic assessment will take place after a period of five years from the completion of closure (July 28, 2001). As allowed by WAC 173-340-410, a compliance monitoring plan for protection and confirmation monitoring during the five-year period may be combined with other plans. Protection and confirmation sampling of groundwater will be achieved through implementation of the dangerous waste final status groundwater monitoring plan. No soil remediation is anticipated to occur during the five-year period. Should subsequent assessment periods be required which include soil remediation activities, a compliance monitoring plan will be combined with the CERCLA Operation and Maintenance Plan for the 100-HR-1 Operable Unit.

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CONTENTS

FIGURES

TABLES

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3.0 GROUNDWATER MONITORING DURING POSTCLOSURE

Groundwater concentration limits have been exceeded for dangerous waste constituents in downgradient monitoring wells at 183-H. WAC 173-303-645(11) requires that a corrective action program be established in the Permit to (1) address the contamination, and (2) monitor the effectiveness of the action (Rasmussen 1996c). This postclosure plan, along with a revised groundwater monitoring plan (Hartman 1997), describes current and future actions to satisfy this requirement.

Corrective action to address groundwater contamination in the 100-H Area, including contamination that has resulted from 183-H, has been initiated as part of CERCLA remediation activities. An IRM to remove hexavalent chromium will begin extracting groundwater from wells located in the vicinity of the former 183-H in July 1997 (DOE-RL 1996b). The IRM pumping system will change local hydraulic gradients and the direction of groundwater flow.

Not all of the dangerous waste constituents attributable to 183-H are specifically targeted by the IRM treatment system. The primary treatment target is chromium. However, nitrate and two nondangerous waste constituents, technetium-99 and uranium, are also likely to be retained on the ion exchange columns, although hexavalent chromium will be preferentially retained. The IRM corrective action is the first phase of groundwater remediation in the 100-H Area, with subsequent phases to be determined by the feasibility study process under CERCLA. A final ROD will be established using information gained during the IRM for chromium.

Figure 3-1 shows the locations of existing groundwater monitoring wells in the 100-H Area. Figure 3-2 illustrates the changes to groundwater flow that are expected to occur during IRM pumping operations. In general, flow direction will change from an easterly to a more northerly direction beneath the former 183-H basins. Changes in water quality, as observed in monitoring wells influenced by the pumping operation, are also expected to occur. Figure 3-3 provides a recent interpretation showing the distribution of chromium contamination in the 100-H Area.

Because of the corrective action pumping operations, the list of "point of compliance" wells per WAC 173-303-645 requirements will change from the definition presented in the 183-H compliance monitoring plan (Hartman and Chou 1995). Also, the change in flow direction may result in variable concentrations for the dangerous waste indicators in the wells previously identified as points of compliance. Therefore, a revised groundwater monitoring plan has been prepared (Hartman 1997) that reflects corrective action monitoring requirements.

The following sections outline the requirements for groundwater monitoring during corrective action and present a sampling and analysis schedule for meeting the requirements. The sampling and analysis schedule for RCRA corrective action requirements becomes a condition of the revised Permit. Other sampling and analysis activities within the 100-H Area are also described for general information purposes only.

3.1 WAC 173-303-645(11)(D) MONITORING REQUIREMENTS

The WAC 173-303-645(11) Corrective Action Program requires the establishment and implementation of a groundwater monitoring program that is capable of demonstrating the effectiveness of the corrective action. This requirement states two general objectives:

- The program may be based on the requirements for a compliance monitoring program under WAC 173-303-645(10) and must be as effective as that program in determining compliance with the groundwater protection standard under WAC 173-303-645(3). A compliance monitoring program that met the objectives of the groundwater protection standard was established and adopted within the Permit (Hartman and Chou 1995).
- Monitoring during corrective actions must be capable of determining the success of the corrective action program. A revised groundwater monitoring plan has been prepared to reflect corrective action requirements (Hartman 1997). Also, as part of the IRM to address chromium contamination, a performance monitoring program has been designed and implemented to evaluate the effectiveness of the pump-and-treat system (DOE-RL 1997).

The following sections demonstrate how the corrective action monitoring requirements in WAC 173-303-645(11) will be met in the 183-H Corrective Action Groundwater Monitoring Plan and 183-H Postclosure Plan.

3.1.1 WAC 173-303-645(3) Groundwater Protection Standard

Washington Administrative Code 173-303-645(3) introduces the principal requirements that must be met to comply with the Dangerous Waste Regulations for releases from regulated units. It refers to WAC 173-303-645(4) Dangerous Constituents, WAC 173-303-645(5) Concentration Limits, WAC 173-303-645(6) Point of Compliance, and WAC 173-303-645(7) Compliance Period. The Groundwater Protection Standard for the regulated unit has been established by Ecology in the facility Permit.

3.1.1.1 WAC 173-303-645(4) Dangerous Constituents.

Dangerous waste constituents were identified in the 183-H compliance monitoring plan (Hartman and Chou 1995). They are hexavalent chromium, as represented by an analysis for total chromium using filtered samples, and nitrate.

Additional waste indicators used to define the contaminant plume attributable to 183-H are technetium-99 and uranium. Wastes from 183-H basins' leakage may have altered various other water quality parameters that are not regulated, but are useful for identifying and tracking contamination from 183-H basins (e.g., specific conductance). Because fluoride was discovered to be elevated in the soil at the bottom of the excavation beneath the 183-H footprint (along with nitrate), fluoride will also be used as an indicator for 183-H contamination in groundwater.

All of the above constituents of interest will be monitored under the revised plan for corrective action groundwater monitoring (Hartman 1997).

3.1.1.2 WAC 173-303-645(5) Concentration Limits.

Dangerous waste constituents from the regulated waste unit may not exceed concentration limits established by the Permit. Permit limits were defined previously in the 183-H compliance monitoring plan (Hartman and Chou 1995). Concentration limits established for the 183-H groundwater plume were as follows:

Dangerous Waste Constituents:	
Chromium (total; filtered sample)	122 µg/L--local background; upgradient sources
Nitrate	45,000 µg/L--EPA MCL for drinking water
Other 183-H Waste Indicators:	
Technetium-99	900 pCi/L--EPA MCL for drinking water
Uranium (total; chemical analysis)	20 µg/L--EPA MCL--proposed

During the period of time that the IRM to address chromium is extracting groundwater, the corrective action monitoring described in the revised groundwater monitoring plan (Hartman 1997) will continue to evaluate new analytical results relative to these concentration limits. Additionally, fluoride results will be evaluated relative to previously established trends and to the EPA MCL for drinking water, which is 1,400 µg/L.

3.1.1.3 WAC 173-303-645(6) Point of Compliance.

"The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated unit." Operation of the IRM groundwater extraction network will alter the pattern of groundwater flow. Therefore, the relative positions (i.e,. upgradient, downgradient) for some of the monitoring wells used to establish the point of compliance listed in the 183-H compliance monitoring plan (Hartman and Chou 1995) will change (see Section 3.2).

A new list of wells has been defined to act as points of compliance while the IRM is operating. The new list was developed at a workshop held on March 5, 1997 using the EPA Data Quality Objectives process. The points of compliance identified at the workshop were subsequently approved by Ecology on April 22, 1997 via letter (Soper 1997b). The wells are identified in the revised groundwater monitoring plan for corrective action monitoring (Hartman 1997) and also in Section 3.2.

3.1.1.4 WAC 173-303-645(7) Compliance Period.

The modified RCRA network and sampling schedule will be in effect during groundwater extraction operations that are conducted as part of the IRM for chromium. Based on the observed impact that the IRM has on groundwater flow patterns and water quality after operations begin, further modifications to the RCRA network may be appropriate during and following the IRM. This postclosure plan and the revised groundwater monitoring plan for corrective action monitoring will be revised and incorporated into a permit modification, as necessary.

Following cessation of groundwater extraction operations under the IRM, RCRA monitoring under the final status monitoring plan (Hartman, 1997) will continue for a minimum of three consecutive years (WAC 173-303-645(7)(c) to demonstrate that the groundwater protection standards of WAC 173-303-645(3) have been met. This monitoring will complement monitoring conducted to (1) evaluate the performance of the IRM and (2) support selection of a final remediation alternative.

3.1.2 WAC 173-303-645(8) General Groundwater Monitoring Requirements

The requirements described in WAC 173-303-645(8) will be met as described in the 183-H corrective action monitoring plan (Hartman, 1997). Newly collected data will be reported quarterly and an evaluation of monitoring data will be reported in the Annual Groundwater Project Report for the Hanford Site (e.g., Hartman and Dresel 1997).

3.2 RCRA CORRECTIVE ACTION GROUNDWATER MONITORING SCHEDULE

The 183-H compliance monitoring plan (Hartman and Chou 1995) has been revised (Hartman 1997) to accommodate changes in (1) the groundwater flow pattern and (2) concentrations of selected waste indicators, which are brought on by pump-and-treat remediation activities. The EPA Data Quality Objectives process (EPA 1994) was followed to help design the revised sampling and analysis schedule. Representatives from RL, Ecology, and EPA reached consensus on objectives, wells to be sampled, constituents for analysis, sampling frequency, and water level measurements (Furman 1997).

The resulting schedule for the 183-H RCRA network is presented in Table 3-1. This table identifies the wells being sampled, the frequency of sampling, and an analysis suite code for the previous RCRA

compliance monitoring schedule and for the revised corrective action monitoring schedule. Table 3-2 provides a complete description of the constituent analysis suites. Information on sampling schedules under CERCLA are included in the Tables, to provide a complete description of all groundwater monitoring activities being conducted in the vicinity of the former 183-H facility.

The RCRA sampling and analysis schedule includes a network of four wells sampled annually. The wells are 199-H4-3, 199-H4-7, 199-H4-12A, and 199-H4-12C (see Figure 3-1). (Wells 199-H4-7 and 199-H4-12A are also used as extraction wells for the pump-and-treat system.) Water samples will be analyzed for the constituents of concern previously identified for tracking contamination attributable to the 183-H basins (nitrate, fluoride, chromium, uranium, and technetium-99). Additional analyses will be performed for alkalinity, other anions, and other metals, to aid in interpreting results. Field parameters (pH, temperature, specific conductance, and turbidity) will also be measured.

Minor modifications to the list of specific wells used and constituents analyzed may be appropriate to account for changing field conditions, IRM operational requirements, and changes identified during the data evaluation process. Recommendations for minor modifications will be presented for regulator approval outside of the permit modification process prior to implementation.

3.3 GROUNDWATER MONITORING UNDER CERCLA

Groundwater underlying the former 183-H basins is included in the 100-HR-3 Operable Unit. This groundwater operable unit contains the groundwater underlying the 100-D/DO Area, 100-H Area, and the 600 Area in between. Along the Columbia River, the boundary of the operable unit is generally accepted as the interface between groundwater discharging from the aquifer and river water. Samples of riverbank seepage and of pore water from riverbed sediment are used to monitor the interface.

3.3.1 100-HR-3 Remedial Investigation Monitoring

The remedial investigation was initially guided by a work plan (DOE-RL 1992) that directed a limited field investigation. A limited field investigation report, which includes a qualitative risk assessment, was prepared (DOE-RL 1994). A focused feasibility study was subsequently conducted that looked at various remediation alternatives to address chromium contamination, and also to help decide whether interim remedial measures were warranted (DOE-RL 1995a). A proposed plan (DOE-RL 1995b) and Record-of-Decision (EPA 1996) were then prepared that described a pump-and-treat alternative to address chromium in the 100-HR-3 and 100-KR-4 Operable Units.

In addition to chromium, other groundwater constituents in the 100-H Area remain above EPA drinking water standards and/or Washington State cleanup levels (Peterson et al. 1996). Chemical constituents include aluminum, fluoride, iron, manganese, nitrate, and uranium. Radiological constituents include gross alpha, gross beta, strontium-90, and technetium-99. None of these constituents have been designated as contaminants of concern for interim remedial measures, by reason of human health or ecological risk.

Sampling under the remedial investigation is typically conducted annually, with some wells being monitored quarterly for selected constituents, and others being sampled once every two years. Biennial sampling is conducted where two wells monitor essentially the same conditions, but each well is sampled on alternate years. The schedule for remedial investigation monitoring well sampling for FY 1997 and FY 1998 is included in Table 3-1.

3.3.2 100-HR-3 Interim Remedial Measure Monitoring

A decision was made in 1996 to proceed with accelerated remediation activities to remove hexavalent chromium (Cr+6) from groundwater underlying the 100-HR-3 Operable Unit (DOE-RL 1995b; EPA

1996). The activities involve pumping groundwater from wells located near the river and removing chromium using an ion exchange resin (DOE-RL 1996a). In the 100-H Area, two additional inland wells were added to the extraction network to intercept chromium migrating into the 100-H Area from sources located to the west. The treated effluent will be reinjected into the unconfined aquifer at an upgradient inland location. Operation of the pump-and-treat system is scheduled to start in July 1997. As stated in the ROD (EPA 1996), the remedial action objectives for the pump-and-treat system include the following three components:

- Protect aquatic receptors in the river bottom substrate from contaminants in groundwater entering the Columbia River (Note: The ROD identifies Cr+6 as the target contaminant)
- Protect human health by preventing exposure to contaminants in the groundwater
- Provide information that will lead to the final remedy.

The relevant standard for meeting these objectives during the IRM is the State of Washington's Ambient Water Quality Standard (AWQS) for Protection of Freshwater Aquatic Life for hexavalent chromium, which is 11 µg/L for chronic exposure (WAC 173-201A-040). The highest priority contaminated areas to be addressed initially by the remedial action are adjacent to riverbed substrate that is known to provide suitable habitat for salmon spawning. Some of these areas have been defined by direct observation of riverbed substrate and sediment pore water analysis (Hope and Peterson 1996a and 1996b).

In addition to chromium, other contaminants of concern in the 100-H Area that were identified in the ROD (EPA 1996) are nitrate, strontium-90, technetium-99, and uranium. With the exception of strontium-90, the ion exchange treatment system is expected to reduce concentrations of all these contaminants. Tritium may also be present in the extracted water; however, tritium concentrations in 100-H Area wells have decreased to below drinking water standards (Peterson et al. 1996).

3.3.2.1 Data Quality Objectives for IRM Monitoring.

Groundwater sampling and analysis activities associated with the IRM for chromium (DOE-RL 1997) serve two general purposes: (1) Performance monitoring to determine the effectiveness and efficiency of the extraction system, and (2) compliance monitoring to show how well the remediation is doing relative to target goals described in the ROD (EPA, 1996).

The objectives for performance monitoring are to collect water level and water quality data that are used to (1) optimize the performance of the groundwater extraction system, (2) document aquifer and chromium plume response to pumping and injection of treated effluent, and (3) obtain supplemental data to support selection of a final remediation alternative for the 100-HR-3 Operable Unit.

Objectives for compliance monitoring are described in the interim ROD (EPA, 1996), which states that monitoring will be conducted at near-river onshore locations that are above the river's high water line. Sampling will be conducted at multiple depth intervals at compliance locations. A dilution factor of 1:1 is allowed when demonstrating compliance with the WAC AWQS of 11 µg/L in riverbed sediment. That is, 22 µg/L at compliance locations is deemed equivalent to 11 µg/L at depths in riverbed substrate of up to 46 cm. Locations initially designated to serve as compliance monitoring points are wells 199-H4-4, 199-H4-5, 199-H4-49, 199-H4-63, and 199-H4-64.

3.3.2.2 IRM Monitoring Wells and Sampling Schedules.

The groundwater monitoring wells used to support the interim remedial measure include extraction wells, injection wells, performance monitoring wells, and compliance monitoring wells. The wells are used to obtain water quality data and water level measurements. The schedules for sampling and analysis of these wells are described in Table 3-1 with the analysis listed in Table 3-2. The tables summarize the sampling and analysis schedules for the IRM network as it is planned for FY 1997 and FY 1998. These

schedules are subject to change as the result of information gained during the IRM. The schedule for water level measurements is provided in Table 3-3.

3.4 INSPECTION, MAINTENANCE, AND REPLACEMENT OF WELLS

Each time a well is sampled by any of the Hanford Site groundwater monitoring programs, the well head, cap, protective posts, and concrete pad are inspected. If the samplers experience problems with dedicated sampling pumps, excessive turbidity in the sample, etc., these problems are noted and maintenance is scheduled.

Periodic maintenance and rehabilitation are generally performed on Hanford Site monitoring wells at five-year intervals. This includes removing dedicated equipment, brushing the well bore, removing sediment accumulation, conducting a downhole video camera survey, responding to service difficulty reports, and reinstalling dedicated equipment. A comprehensive description of well maintenance, reconfiguration, and decommissioning is presented in Chapter 8 of the Hanford Site Annual Groundwater Monitoring Report for FY 1996 (Hartman and Dresel 1997).

Figure 3-1. Location Map for 100-H Area Monitoring Wells.

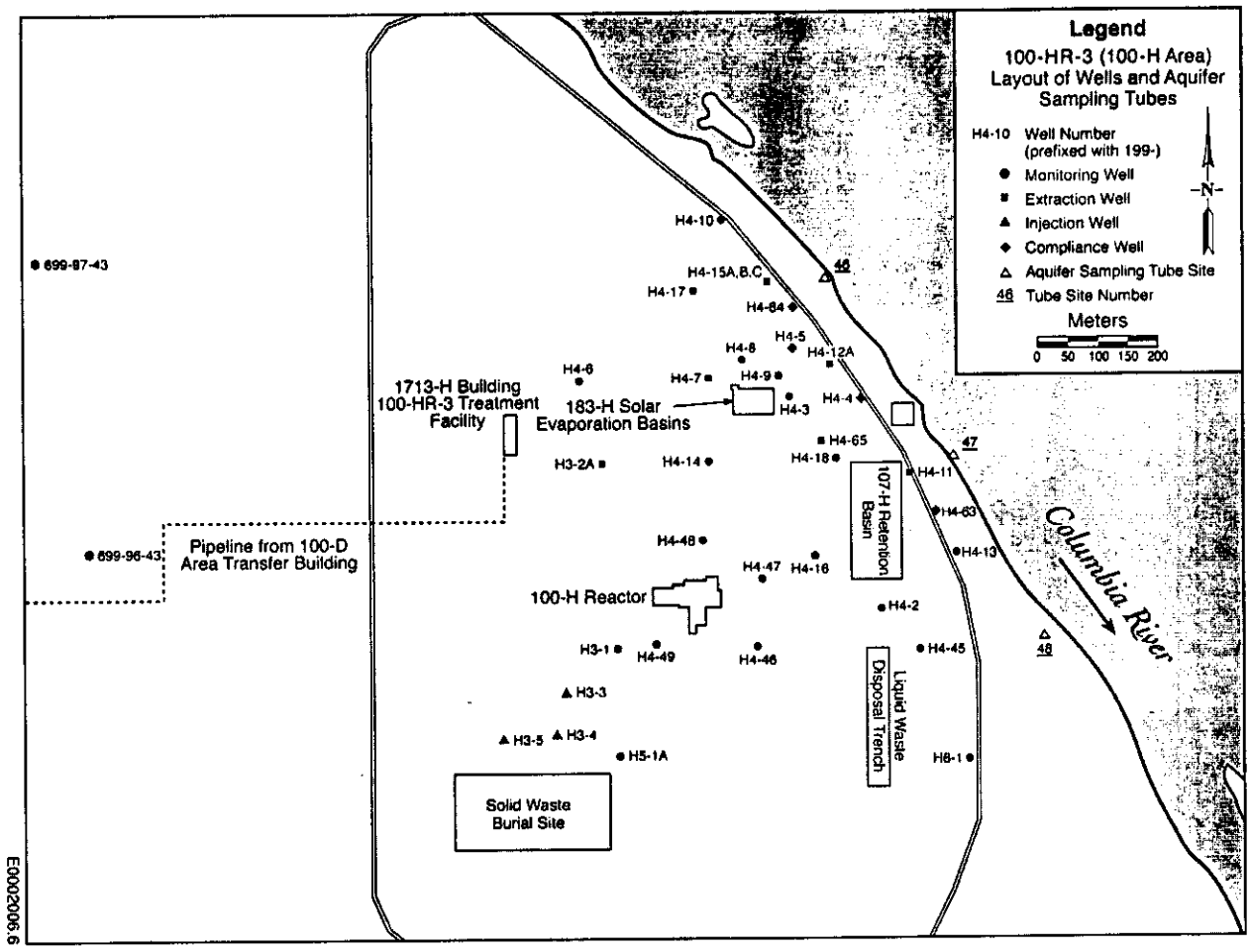

Figure 3-2. Predicted Groundwater Flow During Interim Remedial Measure.

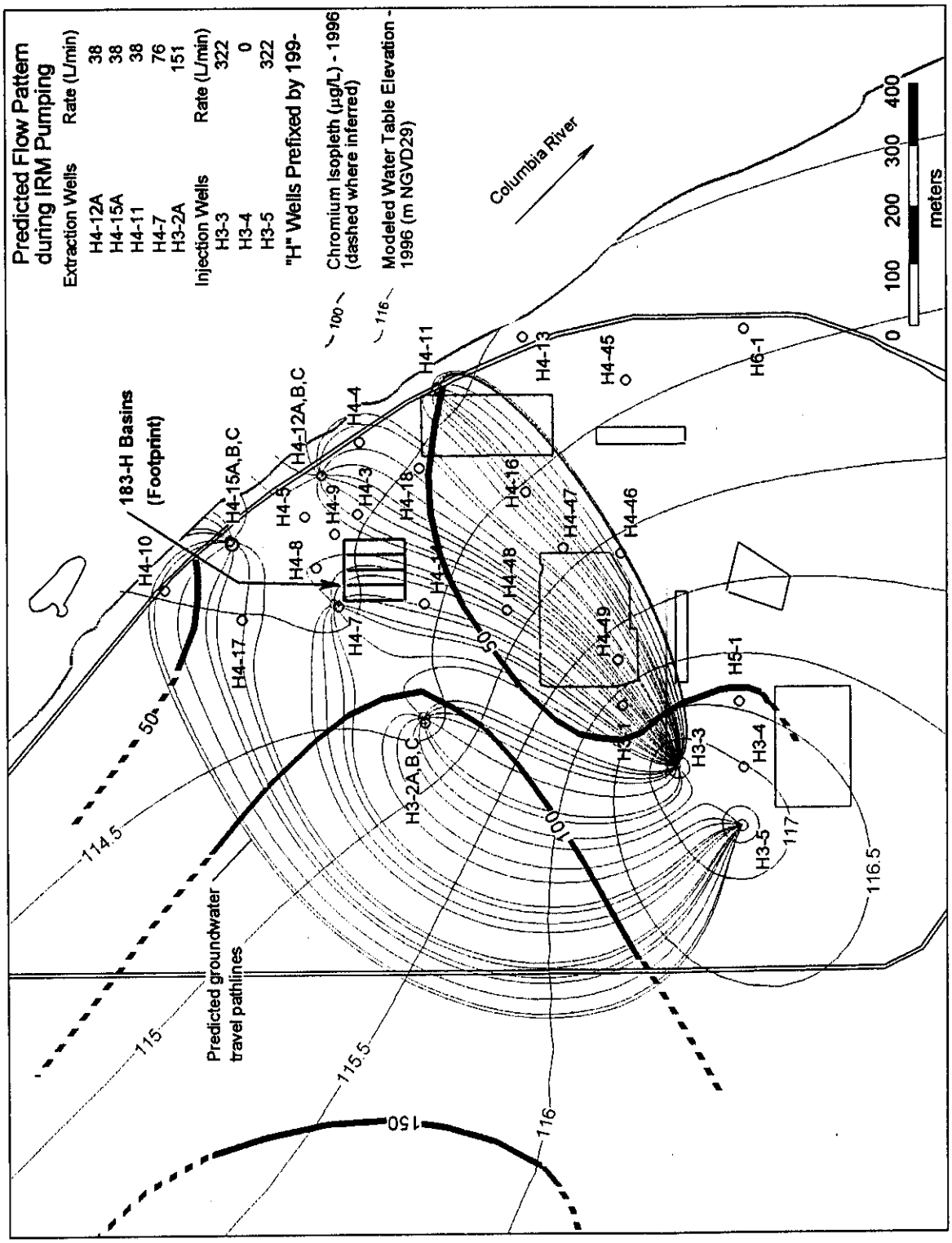

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Figure 3-3. Chromium Contamination in the 100-H Area.

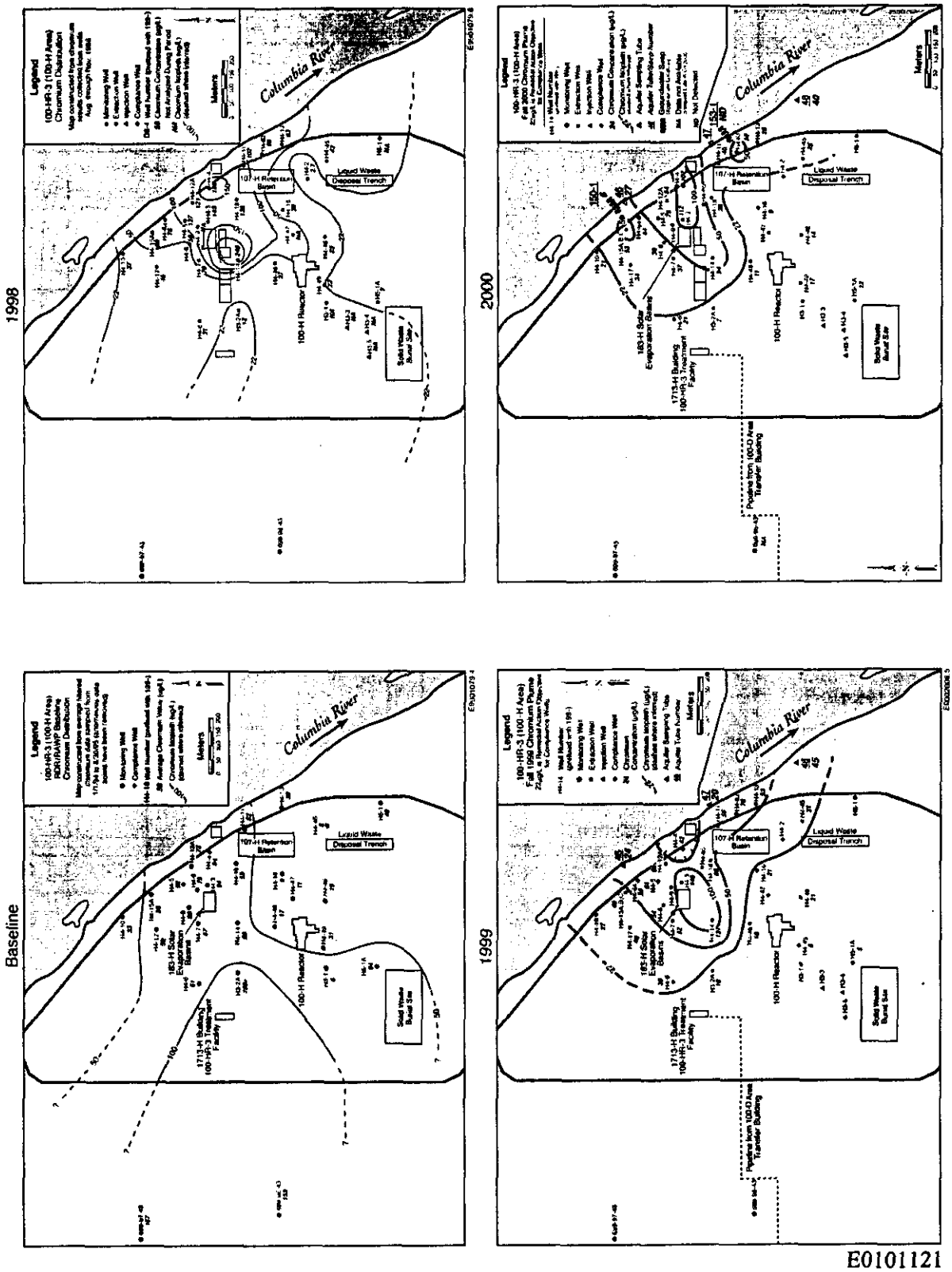

Figure KNT-H1 100-H Area Historic Chromium Distribution

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Table 3-1 . Sampling and Analysis Schedule for 183-H RCRA Corrective Action and CERCLA Remedial Investigation Monitoring.

Well/Location Identifier	Facility Monitored/ Purpose	RCRA:		CERCLA Remediation Activities:		
		183-H: Compliance (Pre-IRM[1])	183-H: Corrective Action [2]	RI/FS[3] Round 11: FY 97	Outlook[3] Round 12: FY 98	IRM Monitor Plan[4]
199-H3-1	Reactor building				BA(98)-2	
199-H3-2A	D-plume migration/ IRM extraction well	SA-1		A-2	A-2	SA-3 Q-Cr
199-H3-2C (deep conditions)	D-plume migration/ vertical distribution				BA(98)-2	
199-H4-3	183-H basins/IRM performance	SA-1	A-1	BA(97)-2		SA-Cr
199-H4-4	183-H basins/IRM compliance	SA-1		A-2	A-2	M-Cr
199-H4-5	183-H basins/IRM compliance				BA(98)-2	M-Cr
199-H4-6	D-plume migration/ IRM performance	SA-1		BA(97)-2		SA-Cr
199-H4-7	183-H basins/IRM extraction		A-1			SA-3 Q-Cr
199-H4-8	183-H basins/IRM performance			BA(97)-2		SA-Cr
199-H4-9	183-H basins	SA-1			BA(98)-2	
199-H4-10	D-plume migration/ IRM performance			A-2	A-2	SA-Cr
199-H4-11	Retention basins/ IRM extraction					SA-3 Q-Cr
199-H4-12A	183-H basins/ IRM extraction	SA-1	A-1			SA-3 Q-Cr
199-H4-12B	183-H basins/ IRM performance					SA-Cr
199-H4-12C (deep conditions)	183-H basins/ IRM performance	SA-1	A-1	A-2	A-2	SA-Cr
199-H4-13	Retention basins/ IRM performance			A-2	A-2	SA-Cr
199-H4-14	190-H coolant prep/ IRM performance			BA(97)-2		SA-Cr
199-H4-15A	D-plume migration/ IRM extraction					SA-3 Q-Cr
199-H4-15B	D-plume migration/ IRM performance					SA-Cr
199-H4-15CS (deep conditions)	D-plume migration/ IRM performance					SA-Cr

Well/Location Identifier	Facility Monitored/ Purpose	RCRA:		CERCLA Remediation Activities:		
		183-H: Compliance (Pre-IRM[1])	183-H: Corrective Action [2]	RI/FS[3] Round 11: FY 97	Outlook[3] Round 12: FY 98	IRM Monitor Plan[4]
199-H4-16	Reactor building/ IRM performance			BA(97)-2		SA-Cr
199-H4-17	D-plume migration/ IRM performance			BA(97)-2		SA-Cr
199-H4-18	183-H basins/ IRM performance	SA-1		A-2	A-2	SA-Cr
199-H4-45	Liquid waste disposal trench/ IRM performance			A-2	A-2	SA-Cr
199-H4-46	Reactor building/ IRM performance			BA(97)-2		SA-Cr
199-H4-47	Reactor building				BA(98)-2	
199-H4-48	Reactor building/ IRM performance				BA(98)-2	SA-Cr
199-H4-49	Reactor building/ IRM compliance				BA(98)-2	SA-Cr
199-H5-1A	118-H-1 solid waste burial/IRM performance				BA(98)-2	SA-Cr
199-H6-1	Liquid waste disposal trench			A-2	A-2	
199-H4-63 (new well FY97)	IRM compliance					M-Cr
199-H4-64 (new well FY97)	IRM compliance					M-Cr
699-96-43	D-plume migration/ background			BA(97)-2		
699-97-43	D-plume migration/ background				BA(98)-2	

Sampling code abbreviations: "BA" = biennial (next year), "A" = annual, "SA" = semiannual, "Q" = quarterly, and "M" = monthly. The "-1, -2, -3" suffixes define the analysis suite (Table 3-2). "Q-Cr" indicates quarterly screening for chromium, Sr-90, etc. "(+Tc-99)" indicates constituent added to basic suite listed in Table 3-2.

Footnotes (References):

1. "183-H Compliance" (183-H compliance groundwater monitoring plan - Hartman and Chou, 1995)
2. "183-H Corrective Action" (183-H corrective action groundwater monitoring plan - Hartman, 1997)
3. "RI/FS Round #11 and #12 Outlook" reflect Tri-Party Agreement Change Control Form #107, November 1996
4. "IRM Monitoring Plan" is for post-July 1997 (IRM Monitoring Plan [DOE-RL 1997]).

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Table 3-2 . Analysis Suite Codes for 183-H RCRA Corrective Action and CERCLA Remedial Investigation Monitoring

Analysis/ Parameter	Constituent Code #1 (RCRA: FY97/98)[1]	Constituent Code #2 (RI Round 11&12--FY97/98)[2]	Constituent Code #3 (IRM--FY97/98)[3]
Metals by routine ICP (EPA 6010A-Target Analyte List Note: Filtered and unfiltered samples for all metal analyses, except ROM collects filtered samples only	Aluminum, Antimony, Barium, *Beryllium*, Cadmium, Calcium, **Chromium**, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc	Aluminum, Antimony, Barium, *Beryllium*, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc	
Metals: Other (EPA 7470; Hach etc.)	Uranium		Chromium, hexavalent Uranium
Anions by IC (EPA 300.0)	Chloride Fluoride Nitrate Sulfate	Chloride Fluoride Nitrate Sulfate	Nitrate
Radionuclide screening:	Activity scan[4]	Gross alpha Gross beta Activity scan[4]	
Specific radionuclides:	Technetium-99	Tritium	Strontium-89/90 Technetium-99 Tritium
Miscellaneous parameters:	Alkalinity		
Field parameters:	pH Specific conductance Temperature Turbidity	pH Specific conductance Temperature Turbidity	pH Specific conductance Temperature Turbidity

Footnotes (References):

1. Code #1 is based on 183-H compliance groundwater monitoring plan (Hartman and Chou, 1995); constituents in **bold** are dangerous waste constituents used for evaluations under WAC-173-303-645(10).
2. Code #2 is based on Tri-Party Agreement Change Control Form #107, November 1996
3. Code #3 is from IRM Monitoring Plan (DOE-RL 1997)
4. Selected wells only

Abbreviations: ICP = inductively coupled plasma; IC = ion chromatography

Table 3-3 . CERCLA Interim Remedial Measure Groundwater Well Network:

Well Number	Intended Use	Operations Period-- July 1997 to end of IRM:			
		Hourly Water Levels[1]	Steel Tape Measure[2]	Hexavalent Chromium[3]	Co-contaminants[4]
199-H3-2A	Extraction well	Transducer	Monthly	Quarterly	Semiannual
199-H4-7	Extraction well	Transducer	Monthly	Quarterly	Semiannual
199-H4-11	Extraction well	Transducer	Monthly	Quarterly	Semiannual
199-H4-12A	Extraction well	Transducer	Monthly	Quarterly	Semiannual
199-H4-15A	Extraction well	Transducer	Monthly	Quarterly	Semiannual
199-H3-3	Injection well	Transducer	Monthly		
199-H3-4	Injection well	Transducer	Monthly		
199-H3-5	Injection well	Transducer	Monthly		
199-H4-3	Performance monitoring		Quarterly	Semiannual	
199-H4-6	Performance monitoring		Quarterly	Semiannual	
199-H4-8	Performance monitoring	Transducer	Monthly	Semiannual	
199-H4-10	Performance monitoring	Transducer	Monthly	Semiannual	
199-H4-12B	Performance monitoring	Transducer	Monthly	Semiannual	
199-H4-12C	Performance monitoring		Quarterly	Semiannual	
199-H4-13	Performance monitoring		Quarterly	Semiannual	
199-H4-14	Performance monitoring		Quarterly	Semiannual	
199-H4-15B	Performance monitoring	Transducer	Monthly	Semiannual	
199-H4-15CS	Performance monitoring		Quarterly	Semiannual	
199-H4-16	Performance monitoring		Quarterly	Semiannual	
199-H4-17	Performance monitoring		Quarterly	Semiannual	
199-H4-18	Performance monitoring		Quarterly	Semiannual	
199-H4-45	Performance monitoring		Quarterly	Semiannual	
199-H4-46	Performance monitoring		Quarterly	Semiannual	
199-H4-48	Performance monitoring		Quarterly	Semiannual	
199-H4-49	Performance monitoring		Quarterly	Semiannual	
199-H5-1A	Performance monitoring		Quarterly	Semiannual	
199-H4-4	Compliance monitoring	Transducer	Monthly	Monthly	Annual
199-H4-5	Compliance monitoring	Transducer	Monthly	Monthly	Annual
199-H4-63	Compliance monitoring	Transducer	Monthly	Monthly	Annual
199-H4-64	Compliance monitoring	Transducer	Monthly	Monthly	Annual

Footnotes:
[1] Hourly measurements using pressure transducers and data loggers
[2] Routine steel tape measurements; monthly measurements to calibrate pressure transducers
[3] Hexavalent chromium using Hach methodology, ERC Mobile Laboratory
[4] Co-contaminants: Nitrate, strontium-90, technetium-99, tritium, and uranium
[3&4] Field measurements for pH, specific conductance, temperature, and turbidity during all sampling

Source: DOE-RL 1997

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4.0 CORRECTIVE ACTION PLAN

Corrective action with regard to residual contamination in the soil and groundwater associated with the 183-H Solar Evaporation Basins has already started. A significant amount of contaminated soil has been excavated from beneath the former concrete basins and has been moved to the ERDF, in accordance with the 183-H Closure Plan contained in the Permit (Ecology 1994) and the action memorandum for disposal of 183-H concrete and soils (DOE-RL et al. 1996). Soil removal was completed at 183-H on May 7, 1997. Groundwater remediation under the CERCLA ROD for the 100-HR-3 Operable Unit (EPA 1996) begins in July 1997 with the startup of a pumping well network and ion exchange treatment system that will remove chromium and some co-contaminants.

4.1 SOIL COLUMN CORRECTIVE ACTION

The majority of soil column contamination has been removed as described in Section 1.2. Nitrate and fluoride remain in the soil column above groundwater protection standards between the bottom of the excavation (6.1 m [20 ft] below grade) and the water table (approximately 4.6 m [15 ft] vertical area), under the former Basin 1. Clean backfill has been added to minimize infiltration of moisture. Institutional controls are in place to prevent human activities that might enhance soil moisture (e.g., irrigation). Final disposition of remaining nitrate and fluoride in the soil underlying the former 183-H facility will be addressed in a final feasibility study and ROD for the 100-HR-1 Operable Unit.

4.2 GROUNDWATER CORRECTIVE ACTION

Groundwater contamination from 183-H waste is still present in groundwater near the former 183-H Basins. Corrective action to remove hexavalent chromium is being undertaken as an interim remedial measure for the entire 100-HR-3 Groundwater Operable Unit. The treatment methodology will remove hexavalent chromium from groundwater, and some nitrate, technetium-99, and uranium. Whether or not fluoride will be retained by the Dowex 21K resin has not yet been demonstrated, but the resin is expected to do so. Final disposition of groundwater contamination from all sources in the 100-H Area will be addressed in a final feasibility study and ROD for the 100-HR-3 Operable Unit, should the CERCLA IRM action not remediate all contamination.

4.3 REMEDIATION EXPECTATIONS DURING THE IRM

The interim remedial measure for chromium is designed to remove hexavalent chromium from groundwater using an ion exchange resin. The resin is expected to also remove some nitrate, fluoride, technetium-99, and uranium (strontium-90 will not be removed), although hexavalent chromium will be removed preferentially. Determining how well the ion exchange resin will perform in removing these co-contaminants and 183-H waste indicators is an objective of the IRM performance monitoring program.

Selection of final remediation alternatives for the soil column associated with the 183-H TSD unit and the underlying groundwater will be done after completion of final feasibility studies for the 100-HR-1 and 100-HR-3 Operable Units. Information gained during the pump-and-treat remediation activities for chromium in groundwater will play a prominent role in guiding the final RODs for these operable units. Also, groundwater monitoring data obtained under the RCRA program (Hartman 1997), the CERCLA remedial investigation (Peterson and Raidl 1996), and the CERCLA interim remedial measure (DOE-RL 1997) will be used in a focused feasibility study to help identify the optimal final remediation alternative.

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5.0 PERSONNEL TRAINING DURING POSTCLOSURE

This section describes the training of the groundwater sampling and analysis task leader and sampling personnel required to complete postclosure care requirements as contained in this postclosure plan.

The training of the sampling and analysis task leader and sampling personnel will receive either classroom instruction or on-the-job training. Sampling and analysis personnel will be trained to perform these functions in accordance with the Hanford Analytical Services Quality Assurance Requirements Documents (DOE-RL 1996c). A person successfully completing the required training courses will be qualified as a groundwater sampler and/or task leader. All personnel will undergo training and at least an annual review for required course.

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6.0 SECURITY

6.1 24-HOUR SURVEILLANCE SYSTEM

The 100 Area will remain an area controlled by RL for the foreseeable future. These areas will be under 24-hour surveillance by Hanford Patrol protective force personnel.

6.2 BARRIER, MEANS TO CONTROL ENTRY, AND WARNING SIGNS

No direct exposure hazards remain at 183-H. However, roadways to the unit and site access will remain administratively restricted to use by authorized personnel only. Access to the 100-H Area from the Columbia River is restricted by posted federal warning signs.

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7.0 CLOSURE CONTACT

The RL will be the official contact for 183-H Solar Evaporation Basins during the postclosure period at the following address:

Director, Regulatory Compliance and Analysis Division*
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

*or its equivalent should there be a future reorganization at RL

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8.0 CERTIFICATION OF POSTCLOSURE

No later than 60 days after completion of the postclosure care period, RL will submit to Ecology a certification of completion of postclosure care. This certification, stating that postclosure care for the unit was performed in accordance with the approved closure plan, will be signed by RL and an independent registered professional engineer. The certification will be submitted by registered mail or an equivalent delivery service. Documentation supporting the independent registered professional engineer's certification will be supplied upon request of the regulatory authority.

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