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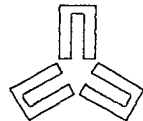
ADMIN RECORD

1994 Well Evaluation Report for the
Rocky Flats Environmental
Technology Site
Final

March 1995

Volume II
Appendix A - Appendix E

DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE



EG&G ROCKY FLATS

EG&G Rocky Flats, Inc.
P.O. Box 464
Golden, Colorado 80402

A-SW-002124

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Log Number B200789
Log Number 11694
Log Number 11794

Appendix G-2 1990 Report Prepared by D.L. Shear

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WATER QUALITY FIELD PARAMETER DATA

A-1 Tabulated Data

A-1.1 Field Test Results

Well 0487

QED Purge-Saver / QED Well Wizard

Well 41691

Hydrolab H20 / Isco Accuwell

Solomat 803 PS / Marschalk Aquarius

Orion / Geotech Flowcell / Grundfos Rediflo 2

QED Purge-Saver / Geoguard Master Flo

Bailer / Hach DREL2000 / Horiba U-10

Well 1786

Hydrolab H20 / Isco Accuwell

Solomat 803 PS / Marschalk Aquarius

Orion / Geotech Flowcell / Grundfos Rediflo 2

QED Purge-Saver / QED Well Wizard

Bailer / Hach DREL2000 / Horiba U-10

Well 2587

Hydrolab H20 / Isco Accuwell

Solomat 803 PS / Marschalk Aquarius

Orion / Geotech Flowcell / Grundfos Rediflo 2

QED Purge-Saver / Geoguard Master Flo

Bailer / Hach DREL2000 / Horiba U-10

Well 20591

Hydrolab H20 / Isco Accuwell

Solomat 803 PS / Marschalk Aquarius

Orion / Geotech Flowcell / Grundfos Rediflo 2

QED Purge-Saver / QED Well Wizard

QED Purge-Saver / GeoGuard Master Flo

Bailer / Hach DREL2000 / Horiba U-10

A-1.2 Bench Test Results

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A-2 Graphed Data

A-2.1 Field Test Results

pH, Dissolved Oxygen

Well 41691

Well 1786

Well 2587

Well 20591

Specific Conductance, Redox Potential

Well 41691

Well 1786

Well 2587

Well 20591

Temperature

Well 41691

Well 1786

Well 2587

Well 20591

Turbidity-Hach 2100P, DR2000

Well 41691

Well 1786

Well 2587

Well 20591

Turbidity-Bailed Test, Active Probe

Well 41691

Well 1786

Well 2587

Well 20591

A-2.2 Bench Test Results

KEY TO TEST CODES		
Purge/Sample System	Instrumentation	Test Code*
Isco Accuwell	Hydrolab H20	A
Marschalk Aquarius	Solomat 803P5	B
Grundfos Rediflo 2	Orion/GeoTech Flow Cell	C
QED Well Wizard	QED Purge-Saver	D
Geoguard Master Flo	QED Purge-Saver	E
Bailer	Hach DREL2000/Horiba U-10	F
* Test codes shown on tables and plots.		

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 0487

Test # D

Golder Associates Inc.

Unit Name: QED Purge-Saver

Pump: QED Well Wizard

Groundwater Field Evaluation (1994 WER)
833-27157

Users: B. Swigle, B. Harder, K. Jackson, M. Capecelatro, L. Bissett

Active Probes:

Temp pH Sp. Cond. DO Turb Redox

(Circle)

Other

CALIBRATION

pH:	Check
Sp. Cond:	Check
DO:	Check
Turb ORP:	Check
Other:	

Adjust:	Auto
Adjust:	Auto
Adjust:	Auto
Adjust:	Auto
Adjust:	

Date/Time: 07/01/94 08:30
Date/Time: 07/01/94 08:35
Date/Time: 07/01/94 08:40
Date/Time: 07/01/94 08:45
Date/Time:

Pump on Date/Time 07/01/94 16:23

Sample Collection Start - Date/Time NA

Pump off Date/Time 07/01/94 16:29

Sample Collection Stop - Date/Time NA

[illegible]

A 0001

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 41691 Test # A
 Unit Name: Hydrolab H20 Pump: ISCO Accuwell
 Users: M. Capecelatro, B. Swigle, K. Jackson, B. Harder, L. Bissett

Golder Associates Inc.
 Groundwater Field Evaluation (1994 WER)
 833-27157

Active Probes:

☒ Temp
 ☒ pH
 ☒ Sp. Cond.
 ☒ DO
 ☒ Turb
 ☒ Redox

(Circle)

Other _____

CALIBRATION

pH: _____ Check
 Sp. Cond: _____ Check
 DO: _____ Check
 Turb ORP: _____ Check
 Other: _____

Adjust: _____ Auto
 Adjust: _____ Auto
 Adjust: _____ Auto
 Adjust: _____ Auto
 Adjust: _____

Date/Time: 07/06/94 07:30
 Date/Time: 07/06/94 07:30
 Date/Time: 07/06/94 07:30
 Date/Time: 07/06/94 07:30
 Date/Time: _____

Pump on Date/Time 07/06/94 15:14

Sample Collection Start - Date/Time

(rad. screen) 15:20
 07/06/94 15:46

Pump off Date/Time 07/06/94 16:00

Sample Collection Stop - Date/Time

07/06/94 16:00

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/06/94	15:14	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/06/94	15:20	00:06	13.61	6.77	751	10.6	266	2.6	2.77	1.0	
07/06/94	15:24	00:10	11.87	6.73	746	4.5	258	2.3	2.25	0.0	
07/06/94	15:26	00:12	11.73	6.73	746	3.9	255	1.4	1.64	0.0	
07/06/94	15:30	00:16	11.91	6.73	748	3.4	250	1.3	1.12	0.0	
07/06/94	15:36	00:22	11.55	6.73	749	2.9	246	1.1	1.00	0.0	
07/06/94	15:39	00:25	12.76	6.74	743	2.9	243	0.70	0.85	0.0	
07/06/94	15:42	00:28	12.18	6.75	749	2.6	240	0.80	0.55	0.0	
07/06/94	15:44	00:30	12.06	6.75	751	2.6	240	0.70	0.48	0.0	

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 41691

Test # B

Goldier Associates Inc.

Unit Name: Solomat 803 PS

Pump: Marschalk Aquarius

Groundwater Field Evaluation (1994 WER)
833-27157

Users: B. Swigle, B. Harder, K. Jackson, K. Bayer, L. Bissett

Active Probes: Temp pH Sp. Cond DO Turb Redox (Circle)
Other

CALIBRATION

pH: Check
Sp. Cond: Check
DO: Check
Turb ORP: Check
Other:

Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust:

Date/Time: 07/02/94 08:30
Date/Time: 07/02/94 08:35
Date/Time: 07/02/94 08:40
Date/Time: 07/02/94 08:45
Date/Time:

Pump on Date/Time 07/02/94 10:59

Sample Collection Start - Date/Time 07/02/94 12:05

Pump off Date/Time 07/02/94 12:51

Sample Collection Stop - Date/Time 07/02/94 12:36

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/02/94	10:59	00:00	13.7	NA	NA	NA	NA	NA	NA	NA	Start Time
07/02/94	11:00	00:01	13.7	NA	745.9	3.89	NA	8.5	12.7	10	
07/02/94	11:03	00:04	13.2	NA	743.1	2.11	NA	12.8	14.7	14	
07/02/94	11:06	00:07	15.2	NA	744.2	1.86	NA	10.5	6.81	12	
07/02/94	11:10	00:11	14.7	NA	742.9	1.49	NA	7.3	7.39	7	
07/02/94	11:13	00:14	13.2	NA	738.9	0.79	NA	7.7	2.66	8	
07/02/94	11:15	00:16	13.4	NA	741.8	1.02	NA	7.3	5.75	6	
07/02/94	11:17	00:18	14.3	NA	739.3	0.96	NA	6.8	1.90	5	
07/02/94	11:19	00:20	13.8	NA	740.1	0.71	NA	7.0	1.45	5	
07/02/94	11:20	00:21	13.7	NA	740.6	0.60	NA	7.1	1.29	6	
07/02/94	11:21	00:22	13.8	NA	738.9	0.52	NA	6.7	0.91	4	
07/02/94	11:23	00:24	13.7	NA	738.9	0.51	NA	7.0	0.83	4	
07/02/94	11:26	00:27	13.9	NA	738.6	0.46	NA	7.1	1.57	5	
07/02/94	11:28	00:29	15.3	NA	739.6	0.57	NA	7.4	0.55	4	
07/02/94	11:30	00:31	15.8	NA	738.9	0.60	NA	7.3	0.62	3	
07/02/94	11:32	00:33	15.2	NA	735.2	0.52	NA	7.3	0.65	3	
07/02/94	11:34	00:35	14.5	NA	735.8	0.38	NA	7.6	0.85	3	
07/02/94	11:37	00:38	13.9	NA	736.0	0.49	NA	7.7	0.48	5	
07/02/94	11:39	00:40	14.7	NA	736.6	0.58	NA	7.8	0.34	3	
07/02/94	11:40	00:41	14.5	NA	730.8	0.55	NA	8.5	NA	NA	
07/02/94	11:41	00:42	12.4	NA	740.6	0.41	NA	20.5	NA	NA	
07/02/94	11:42	00:43	12.3	NA	733.4	0.29	NA	21.9	NA	NA	
07/02/94	11:43	00:44	11.8	NA	739.2	0.22	NA	23.3	NA	NA	
07/02/94	11:44	00:45	11.9	NA	733.4	0.23	NA	27.0	NA	NA	
07/02/94	11:45	00:46	11.9	NA	735.0	0.24	NA	15.9	NA	NA	
07/02/94	11:46	00:47	12.0	NA	737.8	0.20	NA	11.9	NA	NA	
07/02/94	11:47	00:48	11.8	NA	736.5	0.17	NA	9.0	NA	NA	
07/02/94	11:48	00:49	11.7	NA	736.4	0.23	NA	8.4	NA	NA	
07/02/94	11:49	00:50	11.9	NA	737.1	0.23	NA	8.2	NA	NA	
07/02/94	11:50	00:51	11.9	NA	737.0	0.15	NA	7.3	NA	NA	
07/02/94	11:51	00:52	12.6	NA	737.9	0.16	NA	7.5	NA	NA	
07/02/94	11:52	00:53	12.0	NA	737.1	0.15	NA	6.5	NA	NA	
07/02/94	11:53	00:54	12.0	NA	737.8	0.19	NA	6.3	NA	NA	
07/02/94	11:54	00:55	12.1	NA	736.3	0.26	NA	7.4	NA	NA	
07/02/94	11:55	00:56	12.4	NA	737.7	0.26	NA	6.8	NA	NA	
07/02/94	11:56	00:57	12.0	NA	739.1	0.19	NA	7.1	NA	NA	
07/02/94	11:57	00:58	12.1	NA	739.2	0.24	NA	7.1	NA	NA	
07/02/94	11:58	00:59	12.4	NA	738.3	0.26	NA	6.5	NA	NA	
07/02/94	11:59	01:00	12.3	NA	739.2	0.31	NA	6.0	NA	NA	

A 0003

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 41691
 Unit Name: Orion / Geotech Flow Cell
 Users: M. Capecelatro, D. Fortner

Test # C
 Pump: Grundfos Redi-Flo 2

Golder Associates Inc.
 Groundwater Field Evaluation (1994 WER)
 933-27157

Active Probes:

Temp pH Sp. Cond DO Turb Redox

(Circle)

Other _____

CALIBRATION

pH: _____ Check
 Sp. Cond: _____ Check
 DO: _____ Check
 Turb ORP: _____ Check
 Other: _____

Adjust: _____ Auto
 Adjust: _____ Auto
 Adjust: _____ Auto
 Adjust: _____ Auto
 Adjust: _____

Date/Time: 07/03/94 07:15
 Date/Time: 07/03/94 07:15
 Date/Time: 07/03/94 07:15
 Date/Time: 07/03/94 07:15
 Date/Time: _____

Pump on Date/Time 07/03/94 09:50

Sample Collection Start - Date/Time 07/03/94 10:27

Pump off Date/Time 07/03/94 10:42

Sample Collection Stop - Date/Time 07/03/94 10:40

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/03/94	09:50	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/03/94	09:54	00:04	12.0	7.29	699	0.4	108.4	NA	1.97	8.0	
07/03/94	09:57	00:07	12.0	6.80	719	0.5	100.4	NA	1.66	3.0	
07/03/94	09:59	00:09	12.0	6.76	721	0.4	100.6	NA	1.07	0.0	
07/03/94	10:01	00:11	12.1	6.66	726	0.2	96.9	NA	0.99	0.0	
07/03/94	10:03	00:13	12.3	6.65	725	0.1	93.3	NA	0.62	0.0	
07/03/94	10:05	00:15	12.2	6.62	728	0.2	91.4	NA	0.61	1.0	
07/03/94	10:07	00:17	12.2	6.63	728	0.1	89.7	NA	0.65	0.0	
07/03/94	10:09	00:19	12.3	6.65	728	0.1	88.7	NA	0.49	0.0	
07/03/94	10:11	00:21	12.2	6.64	729	0.1	87.4	NA	0.42	0.0	
07/03/94	10:13	00:23	12.6	6.66	726	0.1	87.5	NA	1.07	0.0	Turb from DR2100 might
											have been affected by
											dirty water
07/03/94	10:15	00:25	12.2	6.66	728	0.1	87.7	NA	0.55	0.0	
07/03/94	10:17	00:27	12.2	6.66	729	0.1	89.2	NA	0.44	0.0	
07/03/94	10:19	00:29	12.1	6.66	728	0.1	98.7	NA	0.20	1.0	
07/03/94	10:21	00:31	12.2	6.67	729	0	87.8	NA	0.34	1.0	
07/03/94	10:23	00:33	12.2	6.62	728	0	86.1	NA	0.29	0.0	
07/03/94	10:25	00:35	12.2	6.58	727	0	85.5	NA	0.20	0.0	

A 0004

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 41691 Test # E Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
833-27157

Unit Name: QED Purge Saver Pump: Geoguard Master Flo

Users: B. Harder, H. Sanchez, L. Bissett, D. Kauffman

Active Probes: Temp pH Sp. Cond. DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/09/94 07:30</u>
Sp. Cond: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/09/94 07:30</u>
DO: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/09/94 07:30</u>
Turb ORP: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/09/94 07:30</u>
Other: _____	_____	Adjust: _____	_____	Date/Time: _____

Pump on Date/Time 07/09/94 10:41 Sample Collection Start - Date/Time 07/09/94 11:23

Pump off Date/Time 07/09/94 11:50 Sample Collection Stop - Date/Time 07/09/94 11:50

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/09/94	10:41	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/09/94	10:49	00:08	14.1	NA	746	19	NA	NA	0.89	0.0	Rad Screen
07/09/94	10:52	00:11	13.7	NA	758	13	NA	NA	1.83	0.0	
07/09/94	10:56	00:15	13.2	NA	753	13	NA	NA	0.61	0.0	10:57 2.5 gal.
07/09/94	10:58	00:17	13.0	NA	754	11	NA	NA	0.94	0.0	
07/09/94	11:02	00:21	13.2	NA	766	9	NA	NA	0.48	0.0	
07/09/94	11:05	00:24	12.9	NA	754	7	NA	NA	0.25	0.0	
07/09/94	11:07	00:26	13.0	NA	761	7	NA	NA	0.49	0.0	
07/09/94	11:12	00:31	12.8	NA	758	7	NA	NA	0.38	0.0	
											11:15 4.5 gal.
											2.5 gal.
											2.10 gal.
											11.6 gal. purged
											Samples: 8 gallons
											2 liters
											3 VOA
											1 Rad Screen

A 0005

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 41691

Test # F

Goldier Associates Inc.

Groundwater Field Evaluation (1994 WER)

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

933-27157

Users: M. Capecelatro, K. Jackson

Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Other: _____

Adjust: _____

Date/Time: _____

Pump on Date/Time 07/12/94 13:14

Sample Collection Start - Date/Time 07/12/94 13:40

Pump off Date/Time 07/12/94 14:00

Sample Collection Stop - Date/Time 07/12/94 14:00

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 210 Turb. (NTU)	Horiba Turb. (NTU)	Water Description
07/12/94	13:14	initial	14.3	13.9	6.86	9.21	730.00	655.000	2.49	13	6.04	12	clear
07/12/94	13:20	0.8	12.2	12.3	7.08	9.15	780.00	668.000	3.07		79.5	108	cloudy
07/12/94	13:25	1.6	12.4	12.5	6.96	8.09	770.00	672.000	3.22	82	107	210	cloudy
07/12/94	13:29	2.3	12.6	12.0	7.05	9.02	770.00	674.000	2.98		124	237	cloudy
07/12/94	13:32	3.1	12.4	11.7	6.84	8.94	760.00	681.000	3.67	165	176	319	cloudy
07/12/94	13:36	3.9	12.3	11.6	6.87	8.85	800.00	683.000	4.71		227	603	cloudy
07/12/94	13:40	4.7	12.6	11.6	6.92	8.82	760.00	681.000	5.03	93	257	364	cloudy

A 0006

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 1786 Test # A

Unit Name: Hydrolab H20 Pump: ISCO Accuwell

Users: B. Swigle, B. Harder, K. Jackson, M. Capecelatro, L. Bissett, L. Cope

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: Check

Sp. Cond: Check

DO: Check

Turb ORP: Check/Check

Other: _____

Adjust: Auto

Adjust: Auto

Adjust: Auto

Adjust: Auto

Adjust: _____

Date/Time: 07/01/94 10:07

Date/Time: 07/01/94 10:09

Date/Time: 07/01/94 10:13

Date/Time: 07/01/94 10:17

Date/Time: _____

Pump on Date/Time 07/01/94 12:24

Sample Collection Start - Date/Time 07/01/94 12:49

Pump off Date/Time 07/01/94 13:31

Sample Collection Stop - Date/Time 07/01/94 13:06

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/01/94	12:24	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/01/94	12:29	00:05	15.76	6.80	5550	1.50	309	26.2	17.0	NA	Start Pump
07/01/94	12:30	00:06	14.48	6.76	5480	1.26	310	21.3	NA	NA	
07/01/94	12:31	00:07	13.84	6.74	5530	1.19	313	14.5	17.2	17.0	
07/01/94	12:32	00:08	13.75	6.74	5520	1.14	314	8.1	10.4	14.0	
07/01/94	12:34	00:10	13.56	6.74	5520	1.09	315	5.9	6.85	12.0	
07/01/94	12:35	00:11	13.53	6.73	5520	1.08	316	5.2	5.63	8.0	
07/01/94	12:36	00:12	13.31	6.73	5530	1.07	316	4.4	5.05	7.0	
07/01/94	12:37	00:13	13.23	6.73	5530	1.06	317	4.0	4.07	7.0	
07/01/94	12:38	00:14	13.22	6.73	5520	1.08	318	3.3	4.00	8.0	
07/01/94	12:39	00:15	13.30	6.74	5550	1.05	319	4.4	3.49	9.0	
07/01/94	12:40	00:16	13.16	6.74	5550	1.04	319	2.6	3.25	7.0	
07/01/94	12:41	00:17	13.20	6.74	5550	1.02	320	2.1	3.14	8.0	
07/01/94	12:42	00:18	13.03	6.74	5560	1.01	320	2.0	2.85	8.0	
07/01/94	12:44	00:20	13.06	6.74	5560	1.03	321	2.0	2.30	9.0	Stop flow to cell
											Began sampling

A 0007

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 1786 Test # B Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Unit Name: Solomat 803 PS Pump: Marschalk Aquarius

Users: A. Dump, B. Harder, K. Jackson, M. Capecealatro, L. Bissett Visitors: L. Cope, K. Bayer
S. Singer

Active Probes: Temp pH Sp. Cond DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: _____	Check _____	Adjust: <u>Auto</u>	Date/Time: <u>07/08/94 08:00</u>
Sp. Cond: _____	Check _____	Adjust: <u>Auto</u>	Date/Time: <u>07/08/94 08:00</u>
DO: _____	Check _____	Adjust: <u>Auto</u>	Date/Time: <u>07/08/94 08:00</u>
Turb ORP: _____	Check _____	Adjust: <u>Auto</u>	Date/Time: <u>07/08/94 08:00</u>
Other: _____	_____	Adjust: _____	Date/Time: _____

Pump on Date/Time 07/08/94 09:45 Sample Collection Start - Date/Time 07/08/94 10:48

Pump off Date/Time 07/08/94 11:25 Sample Collection Stop - Date/Time 07/08/94 11:25

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/08/94	09:45	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/08/94	09:58	00:13	12.4	6.55	5.14	8.09	NA	46.5	15.80	16.0	
07/08/94	10:00	00:15	12.4	6.54	5.30	7.36	NA	20.8	11.30	9.0	
07/08/94	10:02	00:17	12.7	6.54	5.37	7.19	NA	15.4	8.19	5.0	
07/08/94	10:04	00:19	12.7	6.54	5.37	6.65	NA	12.5	7.77	6.0	
07/08/94	10:06	00:21	12.8	6.53	5.50	6.20	NA	9.9	3.62	1.0	
07/08/94	10:08	00:23	12.6	6.53	5.35	5.09	NA	8.3	2.90	0.0	
07/08/94	10:10	00:25	12.6	6.53	5.49	5.12	NA	7.7	2.63	0.0	
07/08/94	10:12	00:27	12.5	6.53	5.50	5.09	NA	7.5	2.43	0.0	
07/08/94	10:14	00:29	12.7	6.53	5.44	5.01	NA	6.9	1.84	0.0	
07/08/94	10:16	00:31	12.6	6.53	5.44	4.94	NA	6.6	1.63	0.0	
07/08/94	10:18	00:33	12.7	6.53	5.48	4.62	NA	6.7	1.73	0.0	
07/08/94	10:20	00:35	12.6	6.53	5.43	3.92	NA	6.4	1.50	0.0	
07/08/94	10:22	00:37	12.7	6.54	5.46	4.00	NA	6.5	1.31	0.0	
07/08/94	10:24	00:39	12.7	6.54	5.49	3.94	NA	6.4	0.94	0.0	
07/08/94	10:26	00:41	12.7	6.54	5.54	3.65	NA	6.2	1.12	0.0	
07/08/94	10:28	00:43	12.7	6.54	5.50	3.73	NA	6.2	0.85	0.0	
07/08/94	10:30	00:45	12.7	6.54	5.50	3.28	NA	5.7	0.63	1.0	
07/08/94	10:32	00:47	12.7	6.54	5.54	3.10	NA	6.3	0.72	1.0	
07/08/94	10:34	00:49	12.8	6.54	5.63	3.20	NA	6.4	0.60	0.0	
07/08/94	10:36	00:51	12.7	6.55	5.54	3.17	NA	6.3	1.46	0.0	
07/08/94	10:38	00:53	12.8	6.55	5.53	3.04	NA	6.3	0.65	0.0	
07/08/94	10:40	00:55	13.2	6.55	5.60	2.79	NA	6.3	0.59	0.0	
07/08/94	10:42	00:57	13.2	6.56	5.58	2.90	NA	6.2	0.64	3.0	
07/08/94	10:44	00:59	13.3	6.56	5.58	2.64	NA	6.5	0.36	3.0	
07/08/94	10:46	01:01	13.2	6.57	5.54	2.56	NA	6.1	0.45	4.0	
07/08/94	10:48	01:03	13.3	6.57	5.54	2.54	NA	6.6	0.38	1.0	
07/08/94	10:50	01:05	NA	NA	NA	NA	NA	NA	NA	NA	

A 0008

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 1786 Test # C Golder Associates Inc.
 Unit Name: Orion / Geotech Flow Cell Pump: Grundfos Redi-Flo 2 Groundwater Field Evaluation (1994 WER)
 Users: B. Harder, K. Jackson 933-27157

10.5 gals. purged
 Ending W. L. meas. = 7.20

Active Probes: Temp pH Sp. Cond. DO Turb Redox (Circle)
 Other _____

CALIBRATION

pH: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/07/94 02:30</u>
Sp. Cond: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/07/94 02:30</u>
DO: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/07/94 02:30</u>
Turb ORP: _____	Check _____	Adjust: _____	Auto _____	Date/Time: <u>07/07/94 02:30</u>
Other: _____	_____	Adjust: _____	_____	Date/Time: _____

Pump on Date/Time 07/07/94 13:40

Sample Collection Start - Date/Time

rad. screen 13:45
07/07/94 14:16

Pump off Date/Time 07/07/94 14:46

Sample Collection Stop - Date/Time

07/07/94 14:45

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/07/94	13:40	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/07/94	13:45	00:05	13.0	6.90	5680	1.4	124.8	NA	4.13	4.0	Conductivity in ms/cm
07/07/94	13:47	00:07	13.3	6.87	5740	1.1	136.5	NA	4.14	1.0	
07/07/94	13:49	00:09	13.3	6.84	5750	1.1	137.4	NA	3.41	1.0	
07/07/94	13:51	00:11	13.2	6.87	5760	1.1	141.9	NA	2.09	0.0	
07/07/94	13:53	00:13	13.2	6.85	5800	1.1	149.0	NA	1.46	21.0	
07/07/94	13:55	00:15	13.2	6.85	5780	1.1	151.7	NA	1.51	1.0	
07/07/94	13:57	00:17	13.4	6.84	5790	1.1	155.4	NA	1.82	1.0	
07/07/94	13:59	00:19	13.6	6.83	5760	1.1	164.3	NA	1.45	1.0	
07/07/94	14:01	00:21	14.2	6.77	5750	1.0	172.4	NA	1.66	0.0	
07/07/94	14:03	00:23	13.7	6.78	5780	1.1	170.7	NA	1.28	0.0	
07/07/94	14:08	00:28	13.8	6.80	5800	1.1	177.2	NA	0.89	0.0	
07/07/94	14:10	00:30	13.8	6.80	5820	1.1	186.6	NA	0.79	0.0	
07/07/94	14:12	00:32	13.8	6.80	5810	1.1	185.2	NA	0.65	0.0	

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 1786 Test # D Golder Associates Inc.
 Unit Name: QED Purge-Saver Pump: QED Well Wizard Groundwater Field Evaluation (1994 WER
 Users: M. Capecelatro, K. Jackson, A. Dump, L. Bissett 833-27157

Active Probes: Temp pH Sp. Cond. DO Turb Redox (Circle)
 Other _____

CALIBRATION

pH: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/05/94 08:30</u>
Sp. Cond: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/05/94 08:30</u>
DO: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/05/94 08:30</u>
Turb ORP: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/05/94 08:30</u>
Other: _____	Adjust: _____	Date/Time: _____

Pump on Date/Time	<u>07/05/94 15:48</u>	Sample Collection Start - Date/Time	<u>07/05/94 16:21</u>
Pump off Date/Time	<u>07/05/94 16:43</u>	Sample Collection Stop - Date/Time	<u>07/05/94 16:43</u>

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/05/94	15:48	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/05/94	15:54	00:06	16.2	6.69	5040	7.08	115	NA	20.4	138	
07/05/94	15:55	00:07	13.8	6.71	5300	7.45	112	NA	10.8	15	
07/05/94	15:57	00:09	13.3	6.76	5290	7.08	111	NA	8.39	13	
07/05/94	15:59	00:11	13.4	6.80	5290	6.81	111	NA	7.24	8	
07/05/94	16:00	00:12	13.1	6.82	5280	7.26	111	NA	6.46	8	
07/05/94	16:02	00:14	13.0	6.83	5330	6.81	110	NA	5.02	8	
07/05/94	16:04	00:16	12.9	6.85	5290	7.54	110	NA	4.13	11	
07/05/94	16:06	00:18	12.8	6.86	5360	7.90	110	NA	3.65	12	
07/05/94	16:08	00:20	12.7	6.87	5440	7.72	111	NA	3.58	6	
07/05/94	16:10	00:22	12.7	6.62	5400	6.99	112	NA	2.76	4	
07/05/94	16:12	00:24	12.6	6.79	5460	7.17	112	NA	2.68	2	
07/05/94	16:14	00:26	12.5	6.87	5420	7.90	111	NA	2.09	4	
07/05/94	16:16	00:28	12.4	6.89	5440	7.17	112	NA	1.97	7	
07/05/94	16:18	00:30	12.3	6.88	5390	6.17	111	NA	2.34	4	
07/05/94	16:21	00:33	12.4	6.90	5440	6.08	112	NA	3.21	6	
											16.95 gal. taken out of well

A 0010

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 1786

Test # F

Golden Associates Inc.

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

Groundwater Field Evaluation (1994 WER)

933-27157

Users: M. Capecelatro, K. Jackson

Active Probes: Temp pH Sp. Con DO Turb Redox

(Circle)

Other _____

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Other: _____

Adjust: _____

Date/Time: _____

Pump on Date/Time 07/12/94 13:14

Sample Collection Start - Date/Time 07/12/94 13:40

Pump off Date/Time 07/12/94 14:00

Sample Collection Stop - Date/Time 07/12/94 14:00

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 2 Turb. (NTU)	Horiba Turb. (NTU)	Water Description
07/12/94	09:57	initial	14.6	14.7	6.82	8.45	5480	4990	3.15	85	105	205	cloudy-tan
07/12/94	10:02	0.6	14.0	13.0	6.97	8.19	5600	5030	3.43	over-mg	1000	999	cloudy-tan
07/12/94	10:08	1.2	13.7	12.6	6.90	8.04	5810	5170	4	over-mg	1000	999	cloudy-tan
07/12/94	10:11	1.8	13.6	12.7	6.95	8.06	5880	5250	3.72	over-mg	1000	999	cloudy-tan
07/12/94	10:17	2.4	13.6	12.5	6.85	8.15	5790	5170	4.91	over-mg	1000	999	cloudy-tan
07/12/94	10:21	3.0	13.6	12.1	6.91	8.16	5860	5250	3.54	over-mg	1000	999	cloudy-tan
07/12/94	10:26	3.6	13.6	12.3	6.93	7.96	5840	5190	4.45	over-mg	1000	999	cloudy-tan

A 0011

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 2587

Test # A

Golder Associates Inc.

Unit Name: Hydrolab H20

Pump: ISCO Accuwell

Groundwater Field Evaluation (1994 WER)

933-27157

Users: B. Harder, A. Dump, K. Jackson, M. Capeceletro, L. Bissett

Active Probes:

Temp

pH

Sp. Con

DO

Turb

Redox

(Circle)

Other _____

CALIBRATION

pH: Check

Sp. Cond: Check

DO: Check

Turb ORP: Check

Other: _____

Adjust: Auto

Adjust: Auto

Adjust: Auto

Adjust: Auto

Adjust: _____

Date/Time: 07/08/94 08:00

Date/Time: 07/08/94 08:00

Date/Time: 07/08/94 12:00

Date/Time: 07/08/94 12:00

Date/Time: _____

Pump on Date/Time 07/08/94 13:45

Sample Collection Start - Date/Time 07/08/94 14:30

Pump off Date/Time 07/08/94 14:56

Sample Collection Stop - Date/Time 07/08/94 14:56

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/08/94	13:45	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/08/94	13:52	00:07	13.98	7.14	840	6.75	286	9.7	3.07	1	
07/08/94	13:54	00:09	13.58	7.14	839	6.76	289	8.3	2.35	0	
07/08/94	13:56	00:11	13.45	7.15	840	6.72	293	7.9	1.09	0	
07/08/94	13:58	00:13	13.09	7.14	841	6.66	294	7.8	1.25	0	
07/08/94	14:00	00:15	13.52	7.14	841	6.69	293	8.1	0.86	0	
07/08/94	14:02	00:17	13.31	7.13	841	6.64	292	9.0	1.05	0	
07/08/94	14:05	00:20	13.47	7.15	841	6.63	292	9.5	0.69	0	
07/08/94	14:08	00:23	13.19	7.14	841	6.63	292	9.0	0.67	0	
07/08/94	14:11	00:26	13.32	7.15	840	6.56	292	10.2	0.88	0	
07/08/94	14:13	00:28	13.40	7.15	837	6.58	292	10.5	1.28	0	
07/08/94	14:16	00:31	13.31	7.16	836	6.53	292	10.7	0.51	0	
07/08/94	14:19	00:34	13.14	7.15	836	6.56	293	10.6	0.58	0	
07/08/94	14:22	00:37	13.24	7.16	832	6.46	293	14.7	0.42	0	
07/08/94	14:25	00:40	13.50	7.15	832	6.35	293	12.1	0.58	0	
07/08/94	14:28	00:43	13.24	7.16	830	6.34	294	12.5	0.47	0	

A 0012

WATER QUALITY FIELD PARAMETER MEASUREMENTS

 Well Number: 2587

 Test # B

 Golder Associates Inc.
 Groundwater Field Evaluation (1994 WER)
 933-27157

 Unit Name: Solomat 803 PS

 Pump: Marschalk Aquarius

Users: _____

 Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)
 Other _____

CALIBRATION

 pH: Check
 Sp. Cond: Check
 DO: Check
 Turb ORP: Check
 Other: _____

 Adjust: Auto
 Adjust: Auto
 Adjust: Auto
 Adjust: Auto
 Adjust: _____

 Date/Time: 07/06/94 02:30
 Date/Time: 07/06/94 02:30
 Date/Time: 07/06/94 02:30
 Date/Time: 07/06/94 02:30
 Date/Time: _____

 Pump on Date/Time 07/06/94 10:11

 Sample Collection Start - Date/Time 07/06/94 11:20

 Pump off Date/Time 07/06/94 11:56

 Sample Collection Stop - Date/Time 07/06/94 11:56

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/06/94	10:11	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/06/94	10:16	00:05	14.6	6.92	742.2	14.39	NA	9.1	3.69	1	
07/06/94	10:18	10:18	14.2	6.92	761.6	14.57	NA	11.9	9.62	2	
07/06/94	10:20	10:20	14.0	6.93	765.4	13.87	NA	11.8	10.50	0	
07/06/94	10:22	10:22	14.1	6.94	768.0	14.25	NA	13.5	13.50	8	
07/06/94	10:24	10:24	14.0	6.94	771.7	14.08	NA	16.7	17.80	50	
07/06/94	10:26	10:26	13.9	6.95	768.4	14.86	NA	23.5	18.60	11	
07/06/94	10:28	10:28	13.9	6.95	772.3	14.96	NA	28.5	19.10	20	
07/06/94	10:30	10:30	14.0	6.96	774.0	15.00	NA	25.5	16.90	15	
07/06/94	10:32	10:32	13.9	6.96	769.7	15.07	NA	24.4	16.20	15	
07/06/94	10:34	10:34	13.9	6.96	771.1	15.08	NA	25.0	13.80	6	
07/06/94	10:36	10:36	13.9	6.96	768.1	14.98	NA	24.5	14.00	7	
07/06/94	10:38	10:38	14.0	6.95	770.7	15.24	NA	24.9	14.40	8	
07/06/94	10:40	10:40	14.0	6.96	769.3	15.06	NA	24.3	12.90	7	
07/06/94	10:42	10:42	14.1	6.95	772.9	14.23	NA	23.3	12.20	4	
07/06/94	10:44	10:44	14.0	6.95	776.7	14.11	NA	22.1	11.60	5	
07/06/94	10:46	10:46	13.9	6.95	770.4	14.63	NA	20.0	10.10	0	
07/06/94	10:48	10:48	13.9	6.96	776.2	14.69	NA	19.2	9.76	0	
07/06/94	10:50	10:50	13.9	6.96	766.0	14.11	NA	19.1	8.57	2	
07/06/94	10:52	10:52	13.9	6.96	764.8	14.44	NA	20.9	7.26	0	
07/06/94	10:54	10:54	13.9	6.96	765.1	14.59	NA	20.7	6.65	0	
07/06/94	10:56	10:56	13.9	6.96	772.0	14.63	NA	21.5	5.73	1	
07/06/94	10:58	10:58	13.9	6.96	768.4	14.50	NA	20.9	5.84	0	
07/06/94	11:00	11:00	14.0	6.97	758.4	13.93	NA	23.5	5.79	2	
07/06/94	11:02	11:02	14.0	6.98	756.1	13.43	NA	20.9	5.10	6	
07/06/94	11:04	11:04	13.8	6.98	747.3	14.24	NA	26.9	4.62	3	
07/06/94	11:06	11:06	14.0	6.98	755.9	13.98	NA	26.2	4.45	8	
07/06/94	11:08	11:08	14.0	6.98	761.5	13.53	NA	26.0	4.15	1	
07/06/94	11:10	11:10	15.6	6.99	749.9	11.75	NA	26.5	3.27	0	
07/06/94	11:12	11:12	14.2	6.98	743.8	13.14	NA	27.2	2.94	0	
07/06/94	11:14	11:14	14.2	6.98	742.8	12.91	NA	28.7	2.46	0	
07/06/94	11:16	11:16	14.2	6.99	738.2	12.86	NA	33.1	2.91	0	
07/06/94	11:18	11:18	14.2	6.99	740.3	12.83	NA	35.5	2.51	0	
07/06/94	11:20	11:20	14.2	6.99	734.3	12.44	NA	36.2	2.54	0	

A 0013

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 2587

Test # C

Golder Associates Inc.

Unit Name: Orion / Geotech Flow Cell

Pump: Grundfos Redi Flo 2

Groundwater Field Evaluation (1994 WER)

933-27157

Users: M. Capecelatro, B. Harder, B. Swigle, K. Jackson

Active Probes:

Temp

pH

Sp. Con

DO

Turb

Redox

(Circle)

Other _____

CALIBRATION

pH: 7:00 and 10:00 auto adjust

Sp. Cond: Check

DO: Check

Turb ORP: Check

Other: Turb Arch 2100 - Check

Adjust: Auto

Adjust: Auto

Adjust: Auto

Adjust: Auto

Adjust: Auto

Date/Time: 09:00

Date/Time: 09:00

Date/Time: 09:00

Date/Time: 09:00

Date/Time: 09:00

Pump on Date/Time 6/30/94 13:27

Sample Collection Start - Date/Time 06-30-94 13:54

Pump off Date/Time 6/30/94 14:45

Sample Collection Stop - Date/Time 06-30-94 14:30

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
06/30/94	13:17	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
06/30/94	13:18	00:01	17.5	7.54	1.7	6.0	165.8	NA	92.9	76.0	
06/30/94	13:22	00:05	15.6	7.30	782	5.0	163.6	NA	26.9	22.0	
06/30/94	13:24	00:07	16.0	7.23	788	5.0	148.0	NA	17.0	17.0	
06/30/94	13:26	00:09	16.6	7.20	790	5.0	141.2	NA	11.7	14.0	
06/30/94	13:28	00:11	16.7	7.18	793	5.0	138.9	NA	7.43	5.0	
06/30/94	13:30	00:13	16.5	7.18	794	4.9	154.6	NA	7.30	6.0	
06/30/94	13:32	00:15	16.8	7.17	795	5.0	137.6	NA	8.18	9.0	
06/30/94	13:34	00:17	16.8	7.16	795	5.0	137.4	NA	5.27	10.0	
06/30/94	13:36	00:19	16.7	7.17	794	4.9	137.2	NA	7.94	7.0	
06/30/94	13:38	00:21	16.8	7.17	794	4.8	134.1	NA	6.89	8.0	
06/30/94	13:40	00:23	16.9	7.18	796	4.8	136.0	NA	4.84	8.0	
06/30/94	13:41	00:24	16.7	7.17	795	4.9	134.8	NA	4.94	7.0	
06/30/94	13:42	00:25	16.7	7.19	795	4.8	135.3	NA	3.96	7.0	
06/30/94	13:43	00:26	16.8	7.18	796	4.7	127.5	NA	4.78	7.0	
06/30/94	13:44	00:27	16.8	7.18	796	4.9	132.4	NA	3.95	7.0	
06/30/94	13:46	00:29	17.1	7.16	796	4.8	128.4	NA	3.52	10.0	

A 0014

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 2587

Test # E

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER
933-27157

Unit Name: QED Purge Saver

Pump: GeoGuard Master Flo

Users: B. Swigle, B. Harder, K. Jackson, M. Capecelatro, L. Bissett

Active Probes:

Temp

pH

Sp. Con

DO

Turb

Redox

(Circle)

Other _____

CALIBRATION

pH: Check
Sp. Cond: Check
DO: Check
Turb ORP: Check
Other: _____

Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust: _____

Date/Time: 07/11/94 08:10
Date/Time: 07/11/94 08:12
Date/Time: 07/11/94 08:14
Date/Time: 07/11/94 08:17
Date/Time: _____

Pump on Date/Time 07/11/94 10:53

Sample Collection Start - Date/Time 07/11/94 11:38

Pump off Date/Time 07/11/94 12:04

Sample Collection Stop - Date/Time 07/11/94 12:02

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/12/94	10:53	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/12/94	10:54	00:01	18.8	7.21	357	14	119	NA	7.41	6	
07/12/94	10:59	00:06	15.3	7.19	326	15	111	NA	5.37	0	
07/12/94	11:04	00:11	16.2	7.27	341	16	111	NA	5.27	0	
07/12/94	11:06	00:13	14.7	7.24	342	16	111	NA	4.06	0	
07/12/94	11:08	00:15	14.8	7.24	336	15	111	NA	2.94	0	
07/12/94	11:10	00:17	14.6	7.22	342	15	111	NA	6.32	0	Machine shutoff due to low
											batteries. Fresh batteries
											were installed.
07/12/94	11:12	00:19	14.6	7.21	334	17	118	NA	1.64	3	Pump created a lot of air
											bubbles and they affect
											the turbidity readings.
07/12/94	11:17	00:24	14.0	7.20	354	16	118	NA	3.34	3	
07/12/94	11:20	00:27	14.0	7.18	348	16	116	NA	2.03	0	
07/12/94	11:25	00:32	14.4	7.16	334	16	115	NA	2.06	2	
07/12/94	11:31	00:38	14.4	7.18	334	16	114	NA	1.71	3	

A 0015

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 2587 Test # F Golder Associates Inc.
 Unit Name: Hach DREL2000/Horiba Pump: Bailer Groundwater Field Evaluation (1994 WER)
 Users: M. Capecelatro, K. Jackson 933-27157

Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)
 Other _____

CALIBRATION

pH: Check Adjust: Auto Date/Time: 07/12/94 08:30
 Sp. Cond: Check Adjust: Auto Date/Time: 07/12/94 08:30
 DO: Check Adjust: Auto Date/Time: 07/12/94 08:30
 Turb ORP: Check Adjust: Auto Date/Time: 07/12/94 08:30
 Other: _____ Adjust: _____ Date/Time: _____

Pump on Date/Time 07/12/94 15:03 Sample Collection Start - Date/Time 07/12/94 15:31
 Pump off Date/Time 07/12/94 16:00 Sample Collection Stop - Date/Time 07/12/94 16:00

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 2 Turb. (NTU)	Horiba Turb. (NTU)	Water Descripti
07/12/94	15:03	initial	16.9	14.8	7.56	9.51	760.00	663.000	7.99	20	8.93	19	clear
07/12/94	15:10	1.6	13.7	13.0	7.80	9.29	810.00	725.000	13.13		752	58	cloudy-tan
07/12/94	15:14	3.3	12.5	13.3	7.51	9.19	830.00	780.000	7.62	over-mg	1000	999	cloudy-tan
07/12/94	15:18	4.9	13.0	12.5	7.44	9.11	830.00	749.000	7.39				cloudy-tan
07/12/94	15:22	6.5	13.0	12.7	7.45	8.83	840.00	764.000	11.4	over-mg	1000	999	cloudy-tan
07/12/94	15:26	8.2	13.1	12.3	7.33	9.11	840.00	757.000	12.54		868	59	cloudy-tan
07/12/94	15:31	9.8	12.9	12.5	7.39	8.85	840.00	757.000	12.78	over-mg	1000	42	cloudy-tan

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 20591

Test # A

Golder Associates Inc.

Unit Name: Hydrolab H2O

Pump: ISCO Accuwell

Groundwater Field Evaluation (1994 WER)

933-27157

Users: B. Swigle, B. Harder, K. Jackson, M. Capecelatro, L. Bissett

Active Probes:

Temp pH Sp. Cond. DO Turb Redox

(Circle)

Other _____

CALIBRATION

pH: Check
Sp. Cond: Check
DO: Check
Turb., ORP: Check, Check
Other: _____

Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust: Auto, Auto
Adjust: _____

Date/Time: 07/05/94 08:30
Date/Time: 07/05/94 08:35
Date/Time: 07/05/94 08:40
Date/Time: 07/05/94 08:50
Date/Time: _____

Pump on Date/Time 07/05/94 10:36

Sample Collection Start - Date/Time 07/05/94 12:07

Pump off Date/Time 07/05/94 14:40

Sample Collection Stop - Date/Time 07/05/94 14:40

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/05/94	10:36	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/05/94	10:58	00:22	22.78	7.04	707	5.24	283	23.3	24.0	26	
07/05/94	11:00	00:24	22.89	7.05	706	4.05	285	23.5	21.1	26	
07/05/94	11:03	00:27	23.09	7.05	703	3.85	287	22.6	12.3	17	
07/05/94	11:05	00:29	23.35	7.05	700	3.80	288	21.9	10.9	14	
07/05/94	11:08	00:32	23.41	7.06	702	3.82	290	20.6	9.04	14	
07/05/94	11:11	00:35	23.57	7.06	700	4.93	291	19.3	7.83	12	
07/05/94	11:13	00:37	24.16	7.05	702	5.45	292	16.3	8.00	12	
07/05/94	11:15	00:39	24.11	7.02	706	5.48	294	13.1	6.93	11	
07/05/94	11:17	00:41	24.11	7.01	710	5.23	296	9.2	6.16	12	
07/05/94	11:19	00:43	24.17	7.00	712	4.60	298	8.0	7.16	10	
07/05/94	11:22	00:46	24.25	7.01	717	5.25	299	10.8	5.75	11	
07/05/94	11:24	00:48	23.24	6.99	732	5.67	301	8.7	5.76	10	
07/05/94	11:26	00:50	23.38	6.97	730	4.19	303	8.2	8.79	13	
07/05/94	11:29	00:53	23.19	6.97	733	5.39	305	7.7	5.84	10	
07/05/94	11:31	00:55	22.74	6.96	731	5.52	306	7.5	4.79	9	
07/05/94	11:33	00:57	22.72	6.96	733	5.18	307	7.2	4.82	9	
07/05/94	11:35	00:59	22.75	6.95	733	5.06	309	7.2	4.41	9	
07/05/94	11:37	01:01	22.73	6.95	734	4.94	310	7.1	4.65	9	
07/05/94	11:40	01:04	22.76	6.94	734	4.85	311	7.3	4.11	8	
07/05/94	11:42	01:06	22.73	6.94	734	5.51	312	6.6	7.11	9	
07/05/94	11:44	01:08	23.61	6.95	728	5.41	312	7.2	6.52	9	
07/05/94	11:46	01:10	22.72	6.96	742	5.49	313	7.2	4.79	8	
07/05/94	11:49	01:13	21.33	6.94	745	5.62	315	7.8	4.82	6	
07/05/94	11:52	01:16	21.20	6.92	747	5.44	317	7.4	3.52	8	
07/05/94	11:57	01:21	21.52	6.93	746	4.40	318	7.1	3.23	9	

A 0017

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 20591

Test # **B**

Golder Associates Inc.

Unit Name: Solomat 803 PS

Pump: Marschalk Aquarius

Groundwater Field Evaluation (1994 WER)
933-27157

Users: D. Kauffman, K. Jackson, D. Fortner

Active Probes:

Temp pH Sp. Cond. DO Turb Redox

(Circle)

Other _____

CALIBRATION

pH:	Check
Sp. Cond:	Check
DO:	Check
Turb., ORP:	Check
Other:	

Adjust:	Auto
Adjust:	Auto
Adjust:	Auto
Adjust:	Auto
Adjust:	

Date/Time: 07/08/94 09:00
Date/Time: 07/08/94 09:00
Date/Time: 07/08/94 09:00
Date/Time: 07/08/94 09:00
Date/Time: _____

Pump on Date/Time 07/09/94 08:44

Sample Collection Start - Date/Time 07/09/94 09:31

Pump off Date/Time 07/09/94 13:29

Sample Collection Stop - Date/Time **07/09/94** **13:29**

[illegible]

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 20591 Test # C
 Unit Name: Orion / Geotech Flow Cell Pump: Grundfos Redi Flo 2
 Users: B. Swigle, B. Harder, K. Jackson, M. Capecelatro, L. Bissett

Golder Associates Inc.
 Groundwater Field Evaluation (1994 WER)
 933-27157

Active Probes: Temp pH Sp. Cond. DO Turb Redox (Circle)
 Other _____

CALIBRATION

pH: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/11/94 08:30</u>
Sp. Cond: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/11/94 08:30</u>
DO: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/11/94 08:30</u>
Turb., ORP: <u>Check</u>	Adjust: <u>Auto</u>	Date/Time: <u>07/11/94 08:30</u>
Other: _____	Adjust: _____	Date/Time: _____

Pump on Date/Time 07/11/94 08:44 Sample Collection Start - Date/Time no sample collected
 Pump off Date/Time 07/11/94 09:53 Sample Collection Stop - Date/Time no sample collected

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/11/94	08:44	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/11/94	08:48	00:04	17.60	6.87	786	7.60	126	NA	NA	NA	
07/11/94	08:56	00:12	17.20	6.97	778	4.20	122	NA	13.0	18	
07/11/94	09:00	00:16	18.50	6.99	760	3.50	119	NA	12.1	13	
07/11/94	09:06	00:22	20.00	7.02	753	3.90	126	NA	8.0	5	
07/11/94	09:11	00:27	20.90	7.01	766	4.80	116	NA	8.93	9	
07/11/94	09:14	00:30	21.60	6.99	761	4.90	133	NA	8.95	10	
07/11/94	09:18	00:34	22.30	6.98	752	3.70	134	NA	6.58	7	
07/11/94	09:22	00:38	23.00	6.98	753	4.20	134	NA	6.27	6	
07/11/94	09:31	00:47	24.80	6.96	751	4.50	140	NA	5.34	5	

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 20591 Test # D
 Unit Name: QED Purge Saver Pump: QED Well Wizard
 Users: M. Capecelatro, B. Swigle, B. Harder, K. Jackson, L. Bissett

Golder Associates Inc.
 Groundwater Field Evaluation (1994 WER)
 933-27157

Active Probes: Temp pH Sp. Cond. DO Turb Redox (Circle)
 Other _____

CALIBRATION

pH: Check
 Sp. Cond: Check
 DO: Check
 Turb., ORP: Check
 Other: _____

Adjust: Auto
 Adjust: Auto
 Adjust: Auto
 Adjust: Auto
 Adjust: _____

Date/Time: 07/07/94 08:30
 Date/Time: 07/07/94 08:30
 Date/Time: 07/07/94 08:30
 Date/Time: 07/07/94 08:30
 Date/Time: _____

Pump on Date/Time 07/07/94 09:49 Sample Collection Start - Date/Time 07/07/94 11:24
 Pump off Date/Time 07/07/94 11:26 Sample Collection Stop - Date/Time 07/07/94 11:26

Date	Time	Elapsed Time	Temp (C)	pH	Sp. Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/07/94	09:49	00:00	NA	NA	NA	NA	NA	NA	NA	NA	
07/07/94	09:57	00:08	17.8	6.82	714	7	111	NA	NA	NA	Pump pressure inadequate
07/07/94	09:59	00:10	17.8	6.82	742	6	109	NA	NA	NA	New compressor obtained
07/07/94	10:25	00:36	19.9	7.04	705	16	99	NA	24.80	27	Resumed Test
07/07/94	10:28	00:39	19.6	7.06	719	16	97	NA	23.60	26	
07/07/94	10:30	00:41	19.5	7.08	717	16	97	NA	23.50	22	
07/07/94	10:32	00:43	19.5	7.10	714	15	97	NA	20.00	20	
07/07/94	10:36	00:47	19.6	7.13	721	15	96	NA	20.20	21	
07/07/94	10:38	00:49	20.0	7.13	712	15	95	NA	15.20	17	
07/07/94	10:40	00:51	20.0	7.13	714	15	96	NA	19.50	21	
07/07/94	10:42	00:53	20.2	7.13	716	14	96	NA	9.26	8	
07/07/94	10:44	00:55	20.3	7.14	714	14	95	NA	7.85	5	
07/07/94	10:46	00:57	20.2	7.12	712	14	96	NA	5.75	5	
07/07/94	10:48	00:59	20.0	7.12	705	14	96	NA	5.71	4	
07/07/94	10:50	01:01	19.9	7.11	707	13	96	NA	4.15	1	
07/07/94	10:52	01:03	19.9	7.13	707	13	95	NA	3.75	2	
07/07/94	10:54	01:05	19.9	7.13	707	13	95	NA	3.37	1	
07/07/94	10:56	01:07	19.9	7.12	710	12	95	NA	3.07	1	
07/07/94	10:58	01:09	20.1	7.12	714	12	95	NA	3.10	6	
07/07/94	11:00	01:11	20.3	7.12	716	12	95	NA	3.40	0	
07/07/94	11:02	01:13	20.5	7.12	719	12	96	NA	2.94	2	
07/07/94	11:04	01:15	20.4	7.11	719	12	96	NA	3.35	2	
07/07/94	11:06	01:17	20.2	7.09	716	12	97	NA	3.53	2	
07/07/94	11:08	01:19	20.0	7.11	714	12	97	NA	3.62	2	
07/07/94	11:10	01:21	19.9	7.06	712	12	97	NA	3.43	2	
07/07/94	11:21	01:32	NA	NA	NA	NA	NA	NA	2.42	1	
07/07/94	11:24	01:34	NA	NA	NA	NA	NA	NA	2.44	0	

A 0020

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 20591

Test # E

Golder Associates Inc.

Unit Name: QED Purge Saver

Pump: GeoGuard Master Flo

Groundwater Field Evaluation (1994 WER)
933-27157

Users: P. Liesveld, T. Allen, L. Bissett, B. Harder, R. Michael

Active Probes:

☒ Temp ☒ pH ☒ Sp. Cond. ☒ DO ☐ Turb ☒ Redox

(Circle)

Other _____

CALIBRATION

pH: Check
Sp. Cond: Check
DO: Check
Turb., ORP: Check
Other: -

Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust: Auto
Adjust: _____

Date/Time: 07/10/94 07:00
Date/Time: 07/10/94 07:00
Date/Time: 07/10/94 07:00
Date/Time: 07/10/94 07:00
Date/Time: _____

Pump on Date/Time 07/10/94 08:18

Sample Collection Start - Date/Time 07/10/94 09:29

Pump off Date/Time 07/10/94 13:18

Sample Collection Stop - Date/Time 07/10/94 13:18

Date	Time	Elapsed Time	Temp (C)	pH	Sp.Cond. (uS)	DO (mg/l)	Redox (mV)	Turb. Active Probe (NTU)	Turb. DR2100 (NTU)	Turb. DR2000 (FTU)	Comments
07/10/94	08:18	00:00	NA	NA	NA	NA	NA	NA	NA	NA	Start Time
07/10/94	08:29	00:11	20.3	7.21	779	7	288	NA	15.9	18	
07/10/94	08:34	00:16	21.3	7.35	797	8	235	NA	16.8	18	
07/10/94	08:37	00:19	22.1	7.34	791	11	223	NA	13.6	16	
07/10/94	08:43	00:25	23.6	7.40	797	18	202	NA	11.8	14	
07/10/94	08:59	00:41	22.9	7.16	778	20	125	NA	10.00	11	
07/10/94	09:01	00:43	23.3	7.16	795	22	125	NA	3.78	4	
07/10/94	09:03	00:45	23.9	7.16	781	22	125	NA	3.55	5	
07/10/94	09:05	00:47	24.7	7.19	797	22	123	NA	2.41	1	
07/10/94	09:08	00:50	25.5	7.20	794	22	122	NA	3.01	0	
07/10/94	09:11	00:53	28.6	7.22	798	21	120	NA	3.15	0	
07/10/94	09:14	00:56	27.3	7.23	794	21	118	NA	2.71	0	
07/10/94	09:17	00:59	28.1	7.24	793	20	117	NA	2.78	0	
07/10/94	09:21	01:03	29.0	7.25	790	20	115	NA	2.91	0	
07/10/94	09:25	01:07	29.6	7.25	800	19	114	NA	3.11	2	
07/10/94	09:29	01:11	30.3	7.25	789	19	113	NA	3.00	0	

WATER QUALITY FIELD PARAMETER MEASUREMENTS

Well Number: 20591

Test # F

Golden Associates Inc.

Groundwater Field Evaluation (1994 WER)

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

933-27157

Users: B. Harder, B. Swigle

Active Probes:

☒ Temp

☒ pH

☒ Sp. Co

☐ DO

☒ Turb

☐ Redox

(Circle)

Other _____

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

Other: _____

Adjust: _____

Date/Time: _____

Pump on Date/Time 07/13/94 11:12

Sample Collection Start - Date/Time 07/13/94 11:47

Pump off Date/Time 07/13/94 12:30

Sample Collection Stop - Date/Time 07/13/94 12:30

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 2100 Turb. (NTU)	Horiba Turb. (NTU)	Water Descriptive
07/13/94	11:12	initial	13.8	13.2	7.23	7.05	770.00	684.000	12.82	17	15.6	31	clear
07/13/94	11:20	0.6	13.7	12.4	7.20	7.05	1780.00	1680.000	5.34	over-mg	973	999	brown
07/13/94	11:26	1.1	13.4	12.3	7.27	7.10	1260.00	1210.000	12.79	over-mg	over-mg	999	brown
07/13/94	11:31	1.7	13.3	12.1	7.30	7.05	970.00	920.000	12.94	over-mg	over-mg	over-mg	brown
07/13/94	11:36	2.3	13.0	12.1	7.28	7.00	960.00	780.000	7.04	over-mg	over-mg	over-mg	brown
07/13/94	11:41	2.8	12.9	12.0	7.26	6.93	800.00	736.000	12.67	over-mg	over-mg	over-mg	brown
07/13/94	11:47	3.4	12.9	11.9	7.24	6.91	870.00	884.000	6.66	over-mg	over-mg	over-mg	brown

A 0022

Bench Tests of Field Parameter Instrumentation

Date

07/12/94

Instrument	Date	Time	Temp	pH	Sp. Cond.	DO	ORP
			C	pH units	uS	mg/l	mV
Orion	07/12/94	12:20	22.2	5.79	1477	4.2	79.8
QED	07/12/94	12:25	22.7	5.9	1460	1.7252	132
Solomat	07/12/94	12:30	22.5	6.09	1335	8.22	
Hydrolab	07/12/94	12:37	22.46	6.12	1422	6.5376	340
Hach	07/12/94	12:49	22.7	5.76	1360		109.5
Horiba	07/12/94	12:57	21.5	5.07	1450	6.06	
Laboratory	07/16/94			5.52	1500		

Turbidity Results

25 NTU formazin solution

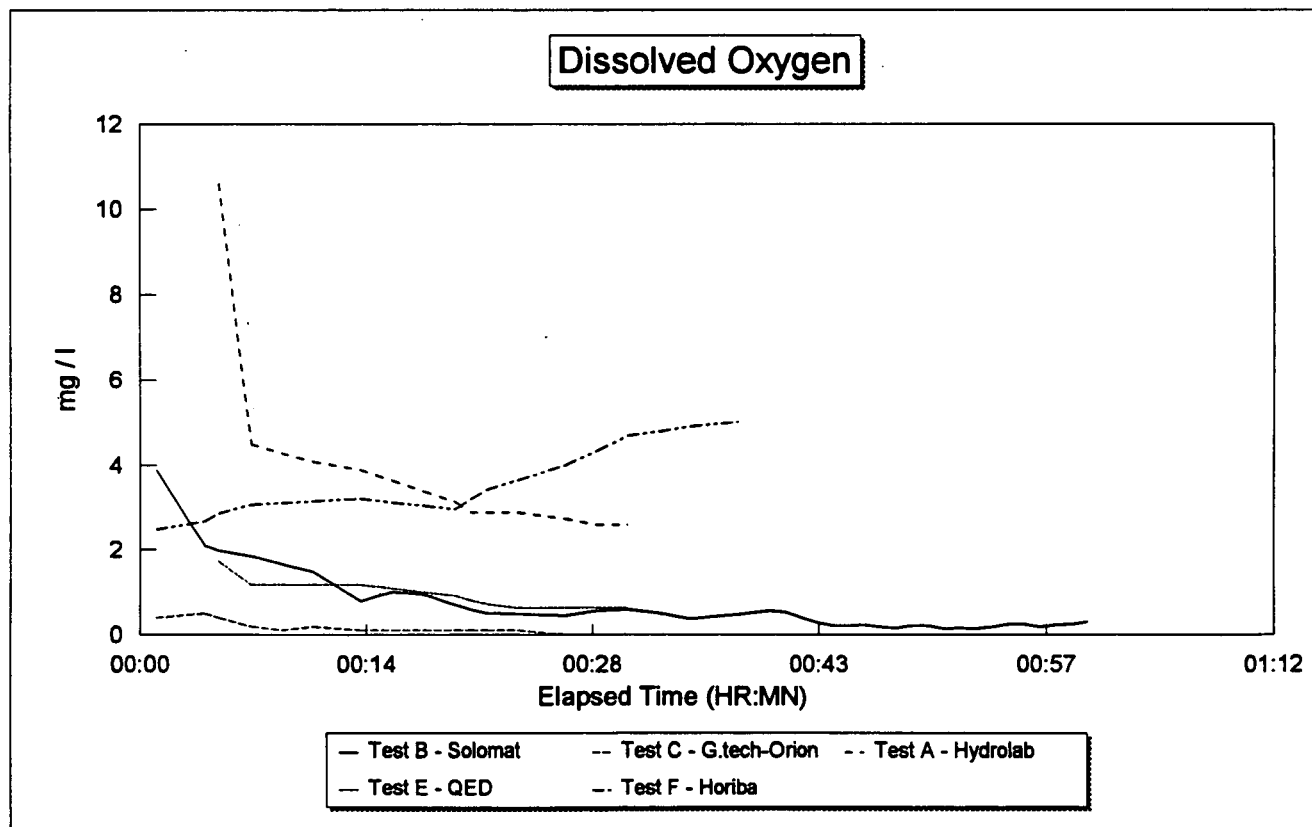
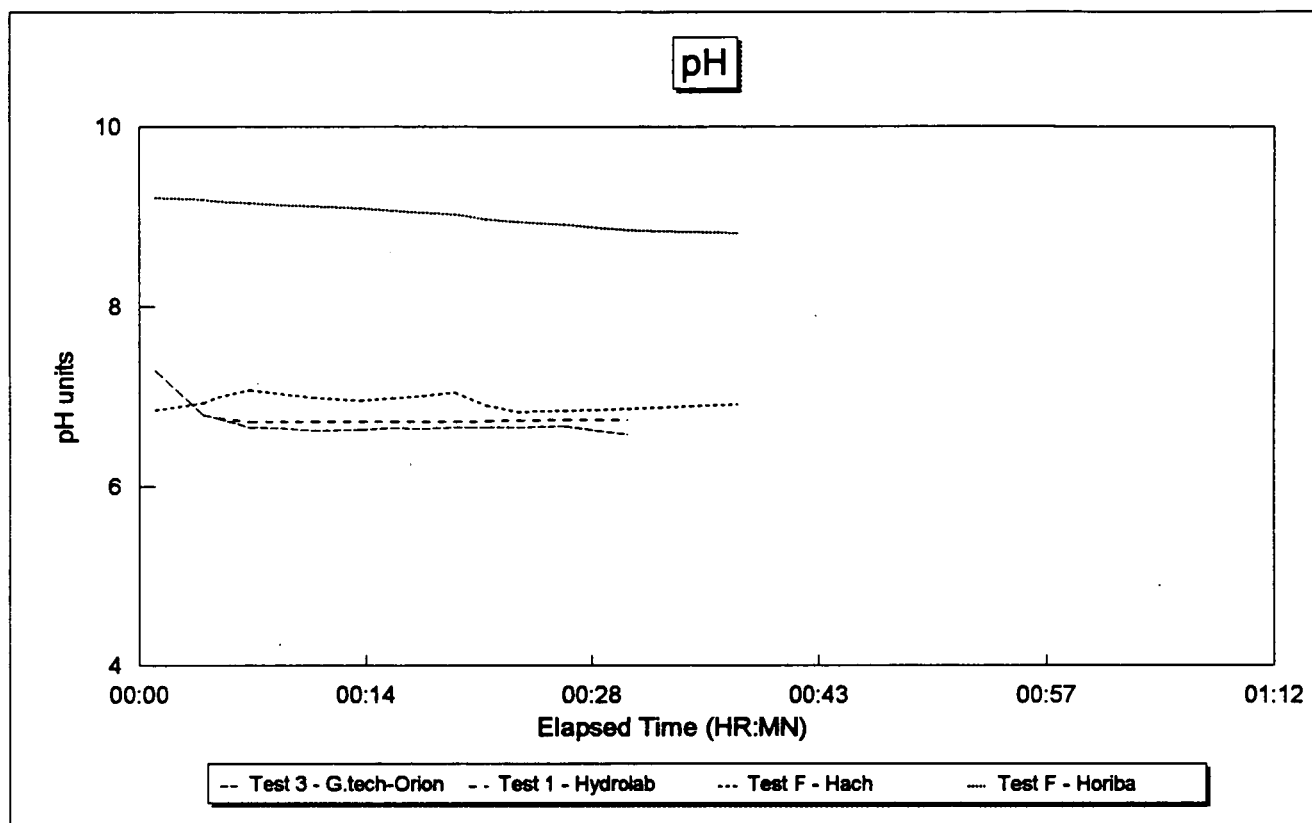
Instrument	Date	Turbidity	Units	Comments
Hach 2100P	07/12/94	22.5	NTU	
Hach DR2000	07/12/94	31	FTU	
Horiba	07/12/94	24	NTU	
Solomat	07/12/94	26.2	NTU	in calibration cup
Solomat	07/12/94	23.4	NTU	clear cell, right side up
Solomat	07/12/94	23.8	NTU	clear cell, upside down
Solomat	07/12/94	32.4	NTU	with screen, right side up
Solomat	07/12/94	32.7	NTU	with screen, upside down
Solomat	07/12/94	32.3	NTU	with screen, right side up, cloth wrapped around cell
Hydrolab	07/12/94	23.7	NTU	cloth wrapped around cell
Hydrolab	07/12/94	22.2	NTU	box around cell
Hydrolab	07/12/94	0	NTU	nothing around cell

Turbidity Results

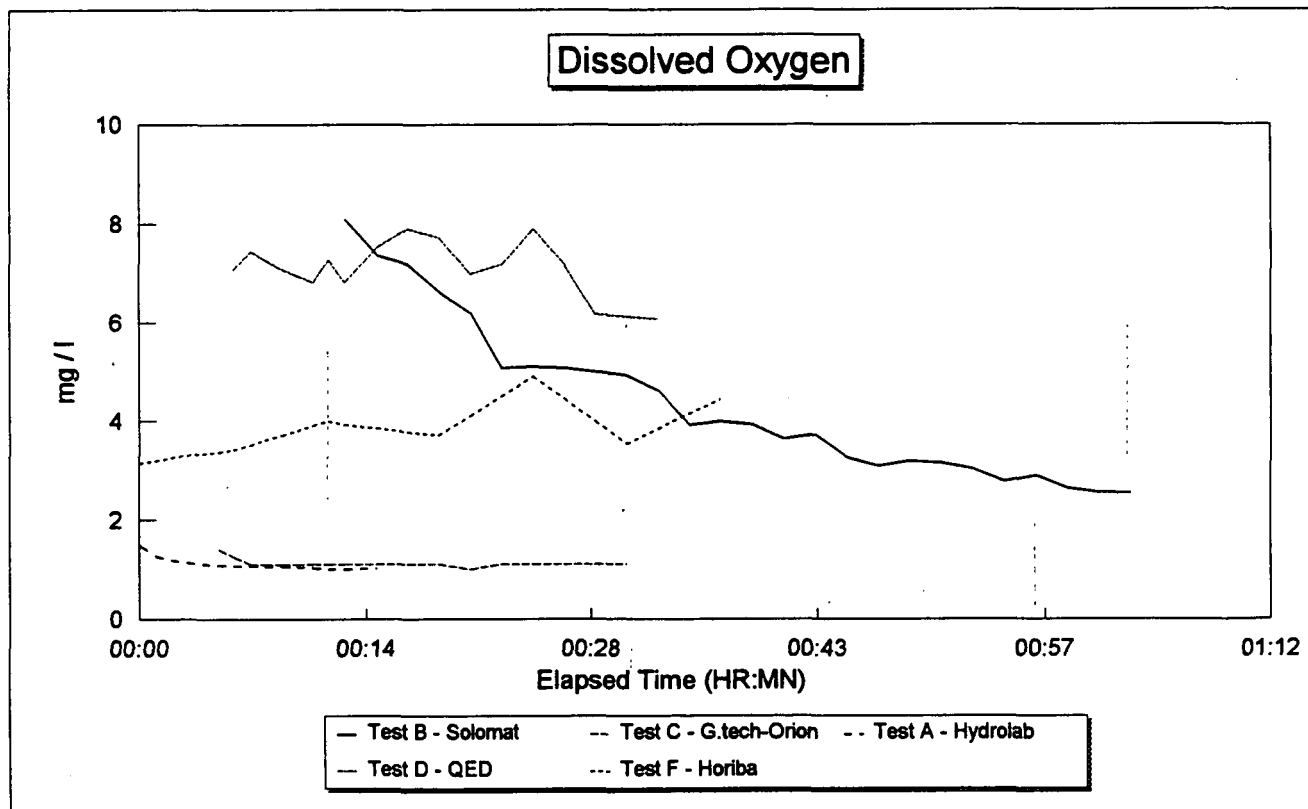
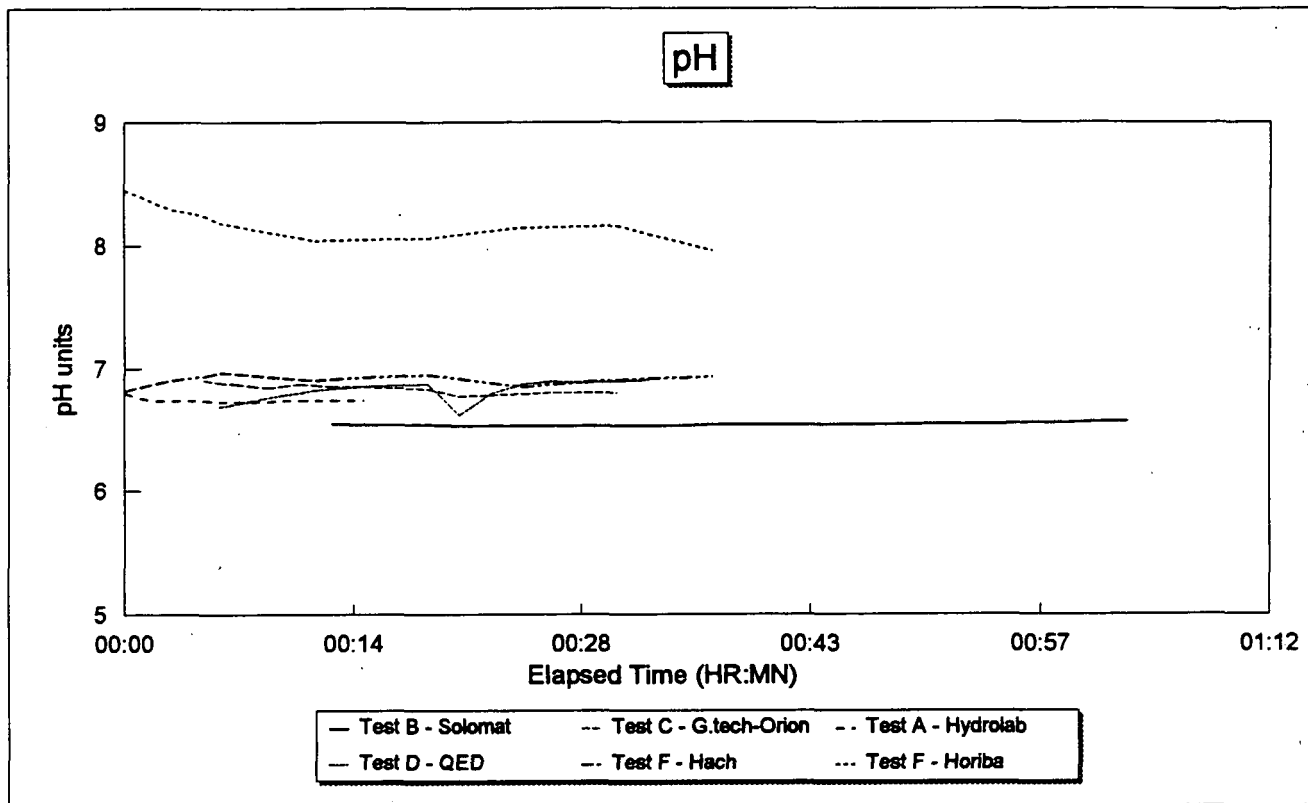
Polymer Solution

Instrument	Date	Standard NTU	Reading	Units	Comments
Hach 2100P	07/13/94	50	50.2	NTU	
Hach 2100P	07/13/94	5	5.98	NTU	
Hach 2100P	07/13/94	0.5	0.64	NTU	
Hach 2100P	07/13/94	500	276	NTU	
Horiba	07/13/94	20	40	NTU	
Horiba	07/13/94	0.5	3	NTU	
Horiba	07/13/94	50	36	NTU	
Solomat	07/13/94	20	36.9	NTU	in calibration cup
Solomat	07/13/94	5	5.9	NTU	in calibration cup
Solomat	07/13/94	0.5	0.4	NTU	in calibration cup
Hydrolab	07/13/94	5	4.5	NTU	
Hydrolab	07/13/94	20	17.2	NTU	
Hydrolab	07/13/94	0.5	0.6	NTU	
Hach DR2000	07/13/94	0.5	0	FTU	
Hach DR2000	07/13/94	20	16	FTU	
Hach DR2000	07/13/94	5	4	FTU	
Hach DR2000	07/13/94	100	106	FTU	
Hach DR2000	07/13/94	500	429	FTU	

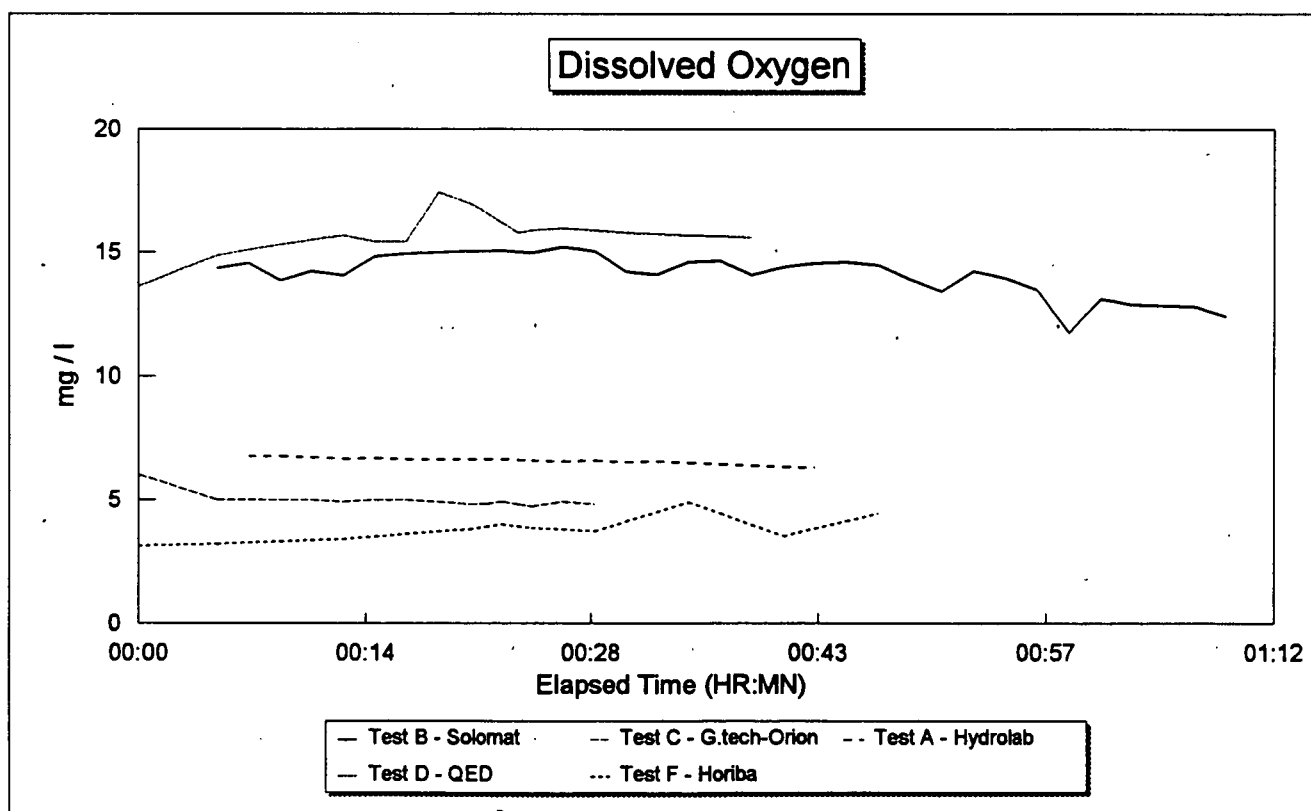
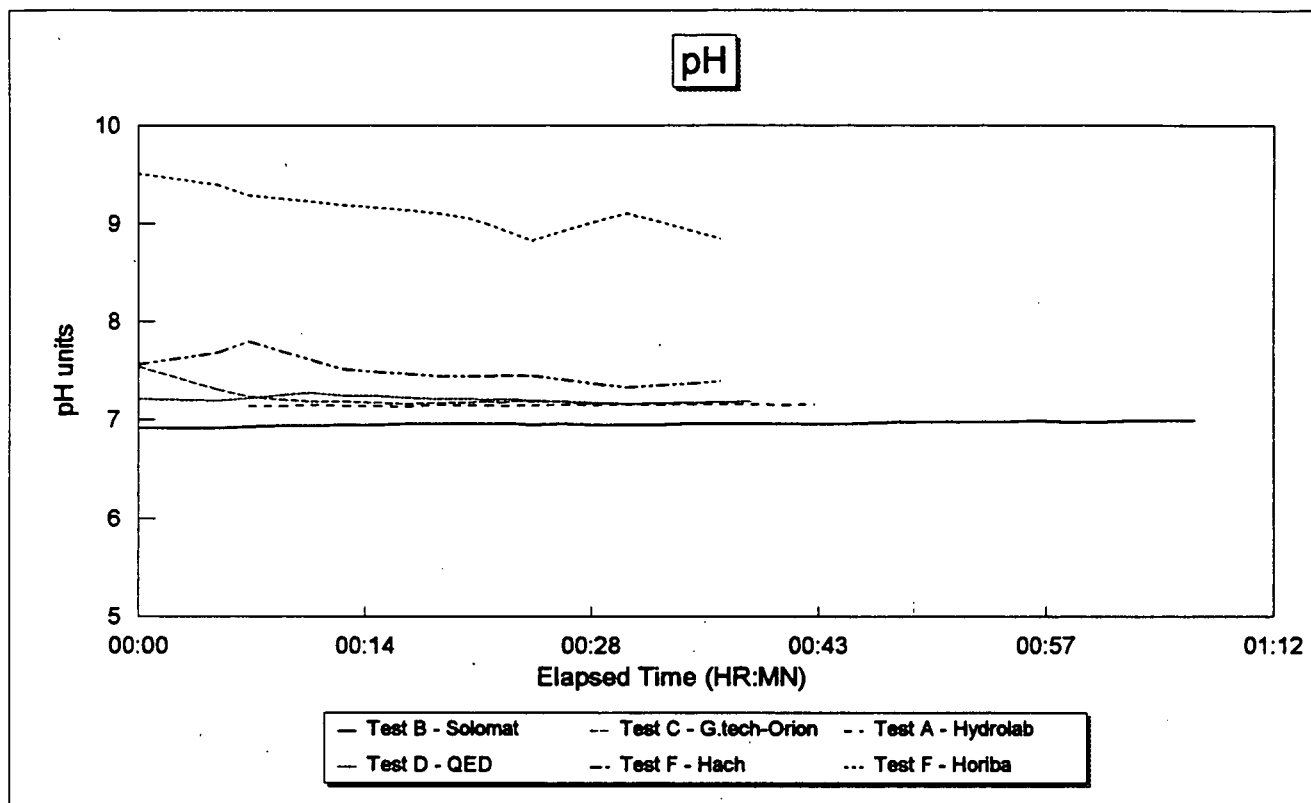
Instrument Comparison by Parameter - Well 41691



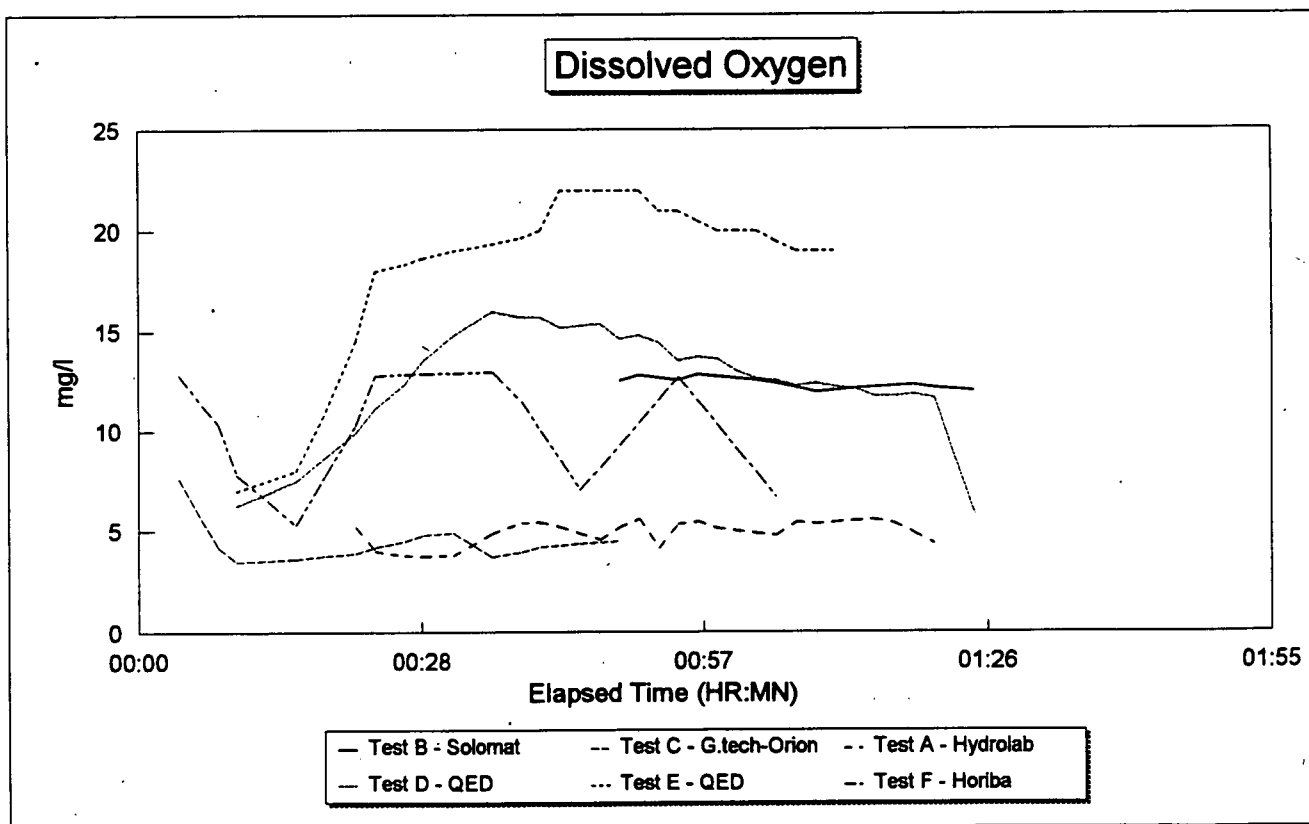
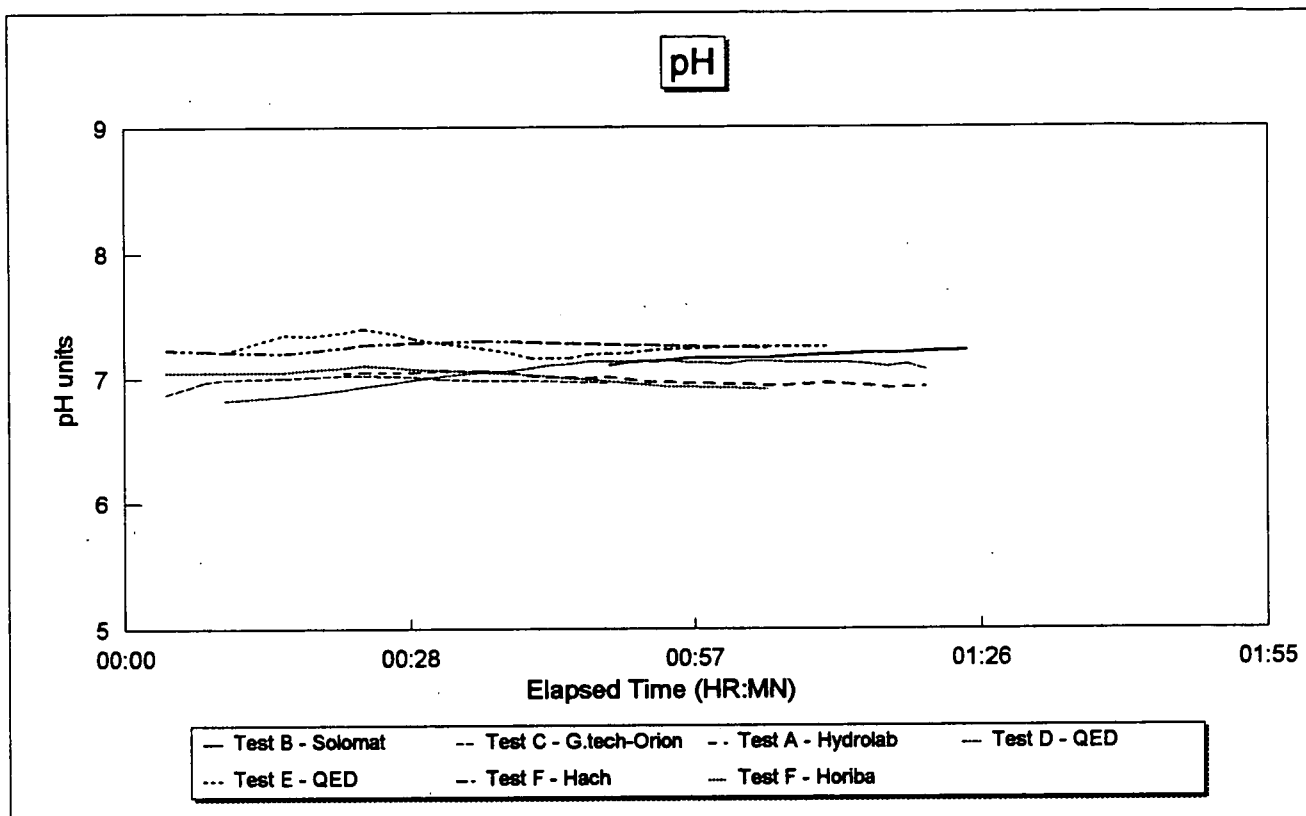
Instrument Comparison by Parameter - Well 1786



Instrument Comparison by Parameter - Well 2587

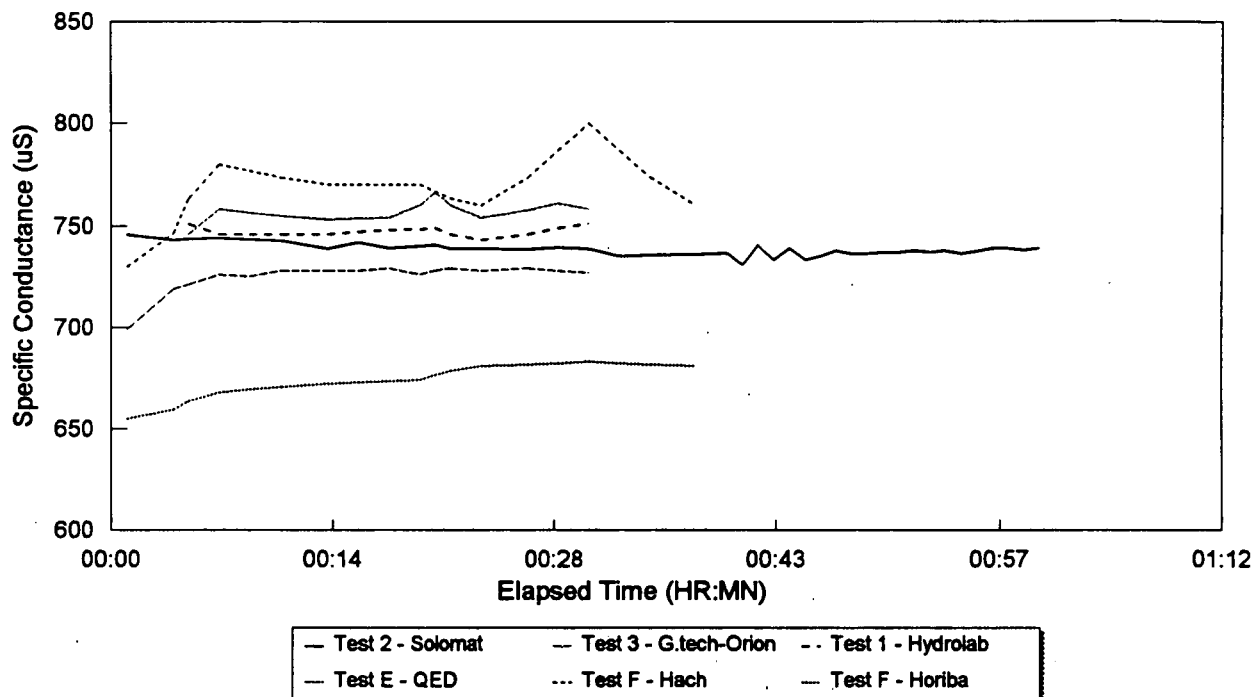


Instrument Comparison by Parameter - Well 20591

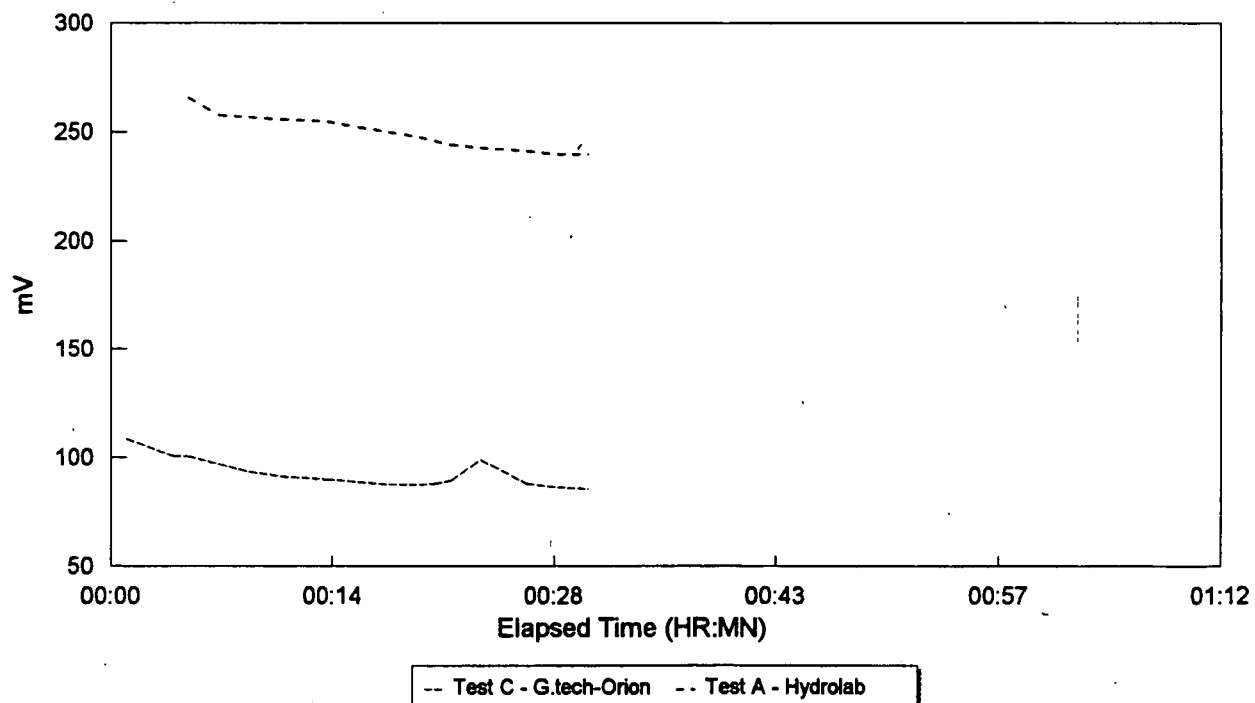


Instrument Comparison by Parameter - Well 41691

Specific Conductance

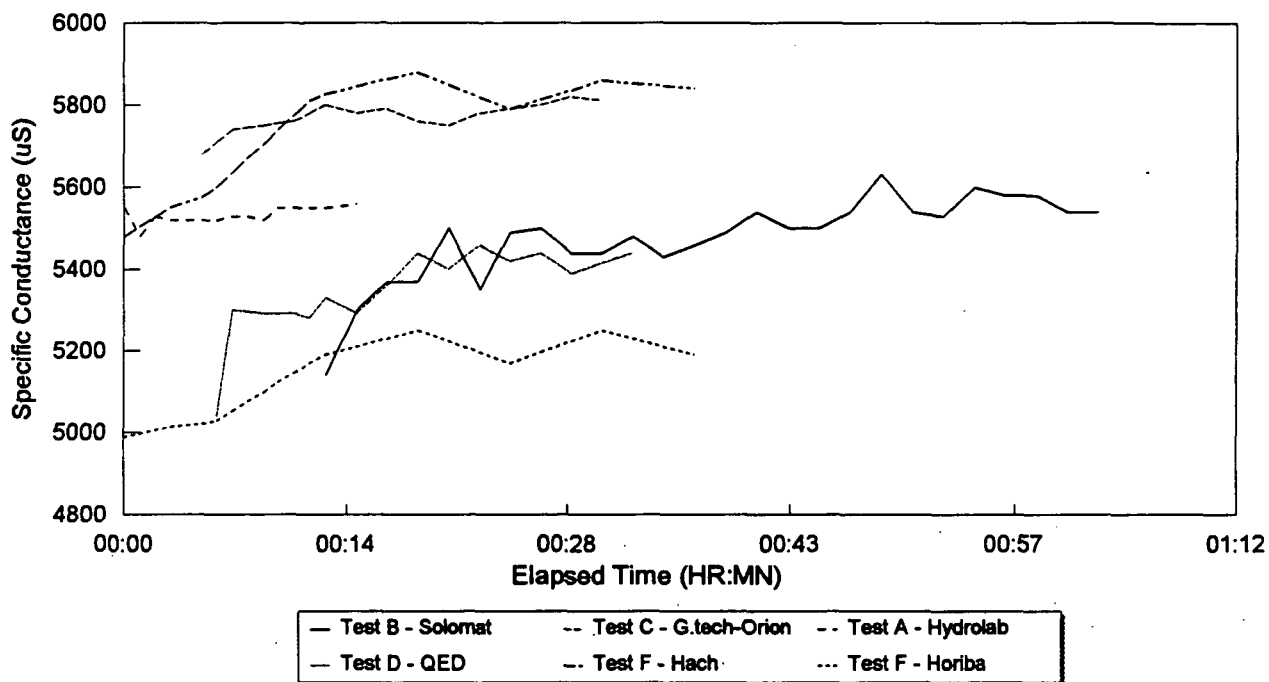


Redox Potential

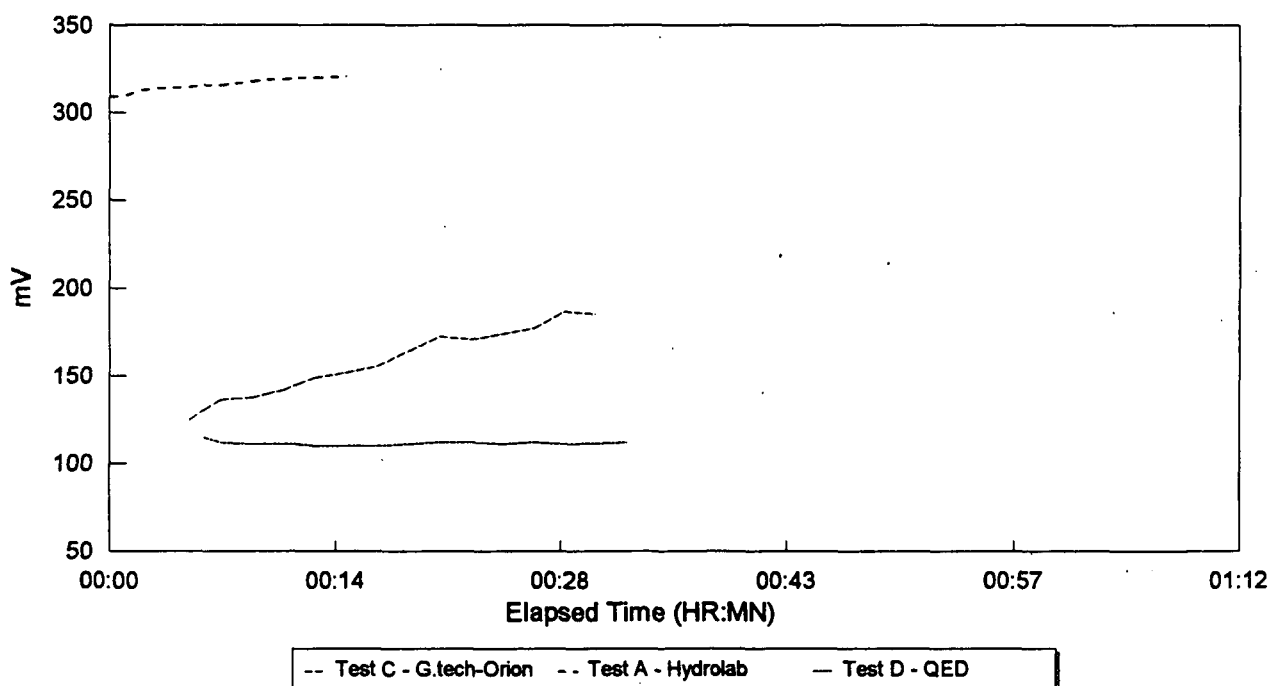


Instrument Comparison by Parameter - Well 1786

Specific Conductance

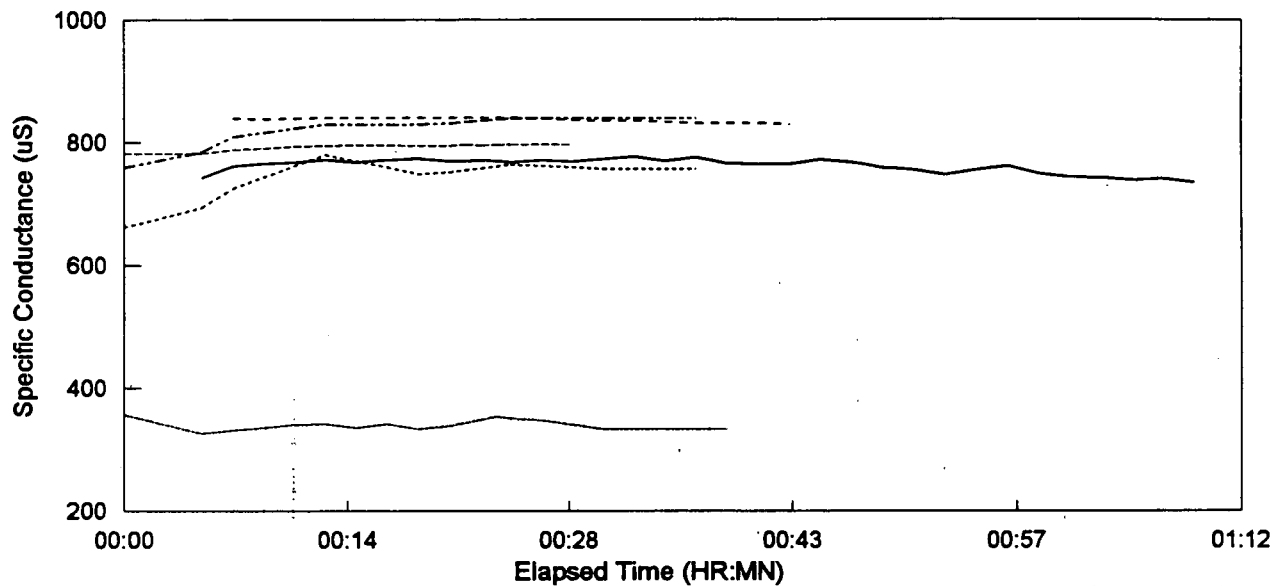


Redox Potential



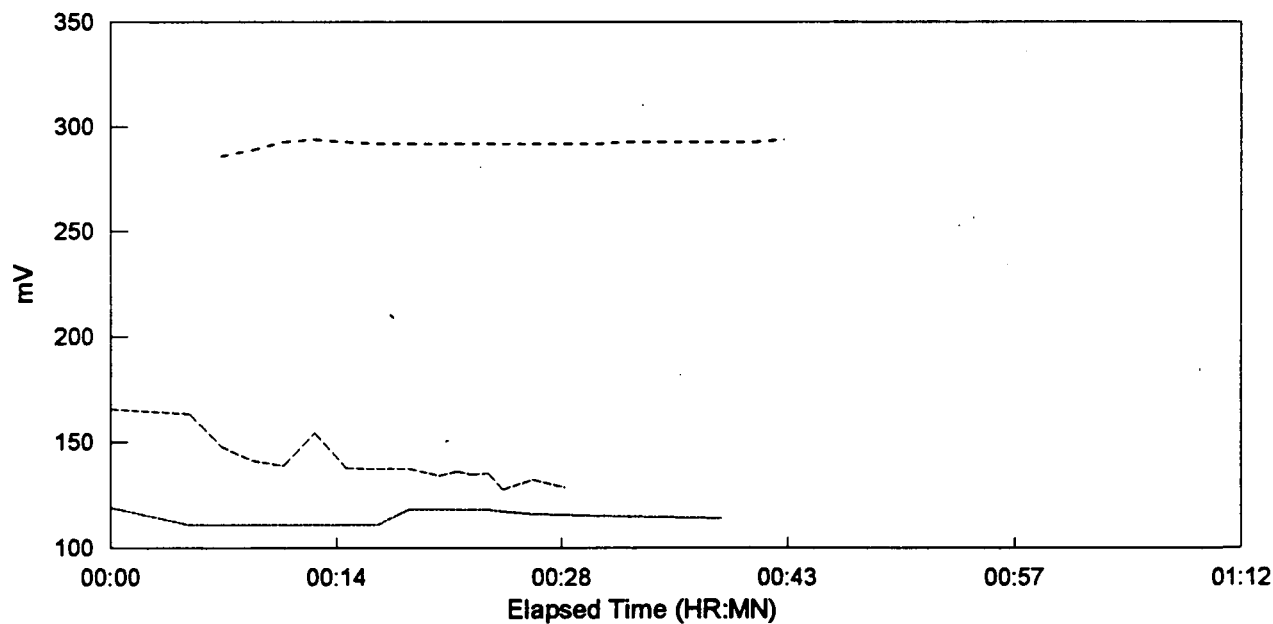
Instrument Comparison by Parameter - Well 2587

Specific Conductance



— Test B - Solomat -- Test C - G.tech-Orion - - Test A - Hydrolab
 — Test D - QED -- Test F - Hach - - Test F - Horiba

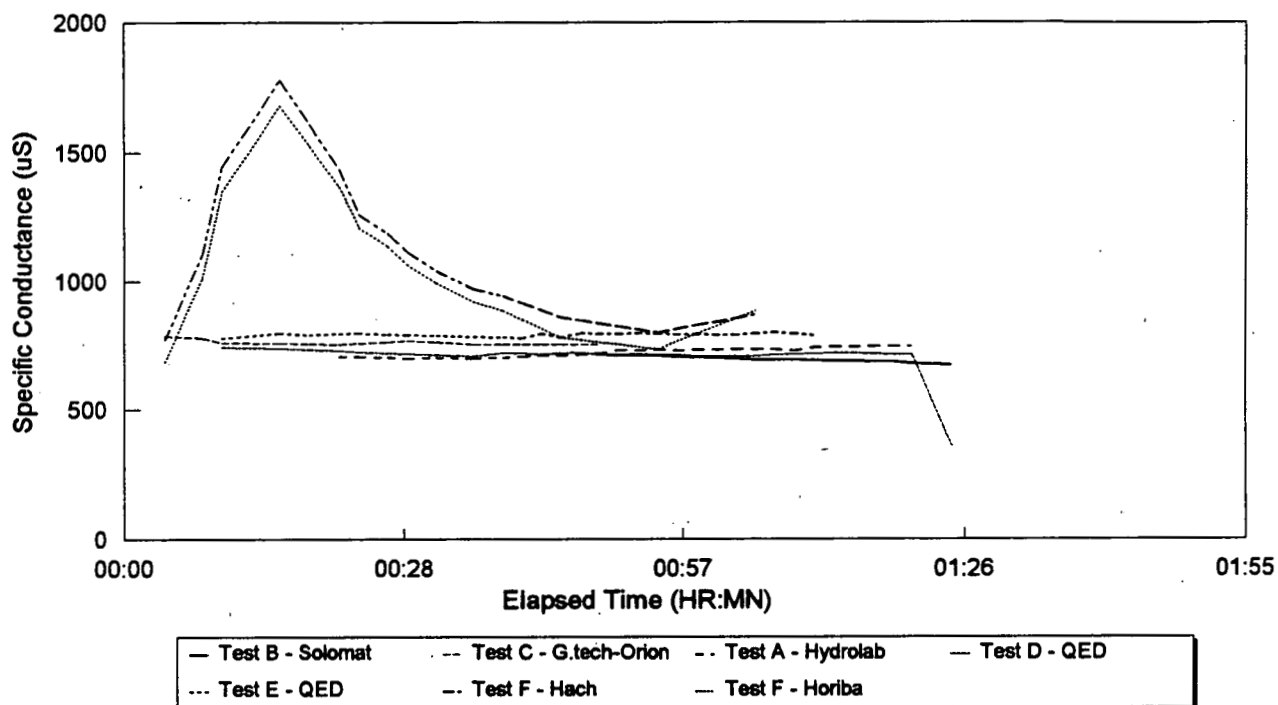
Redox Potential



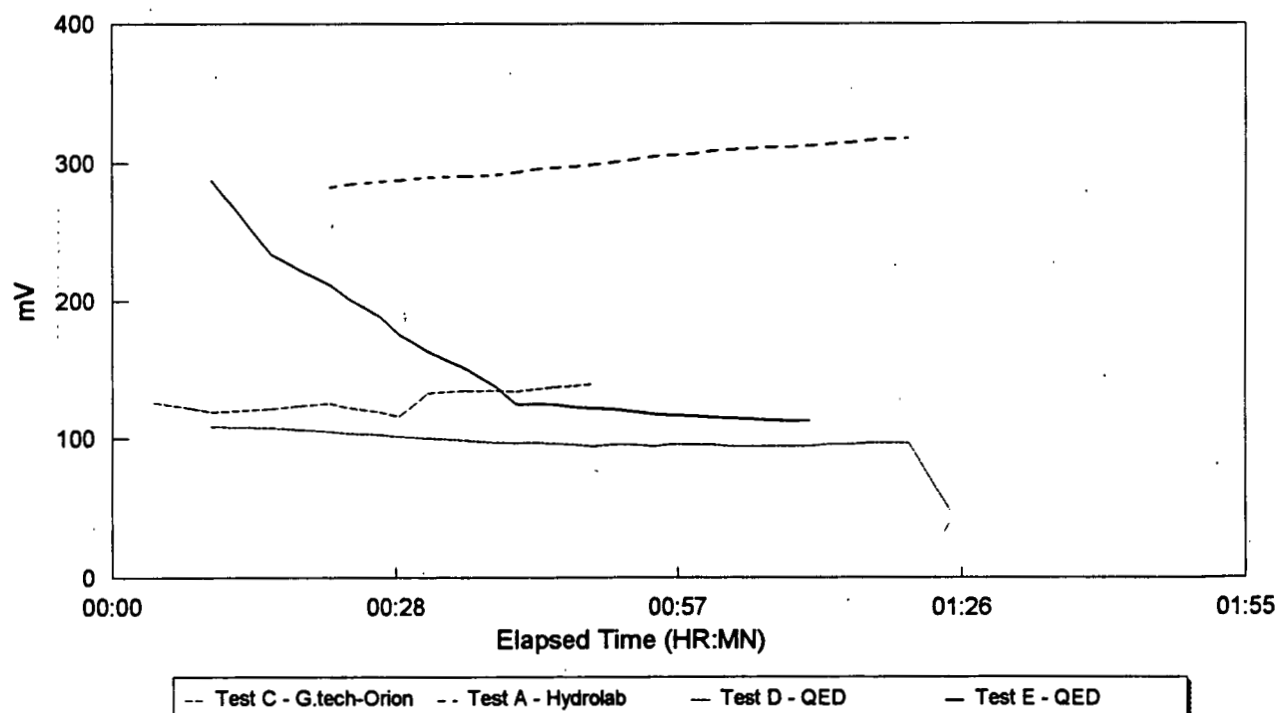
-- Test C - G.tech-Orion - - Test A - Hydrolab — Test D - QED

Instrument Comparison by Parameter - Well 20591

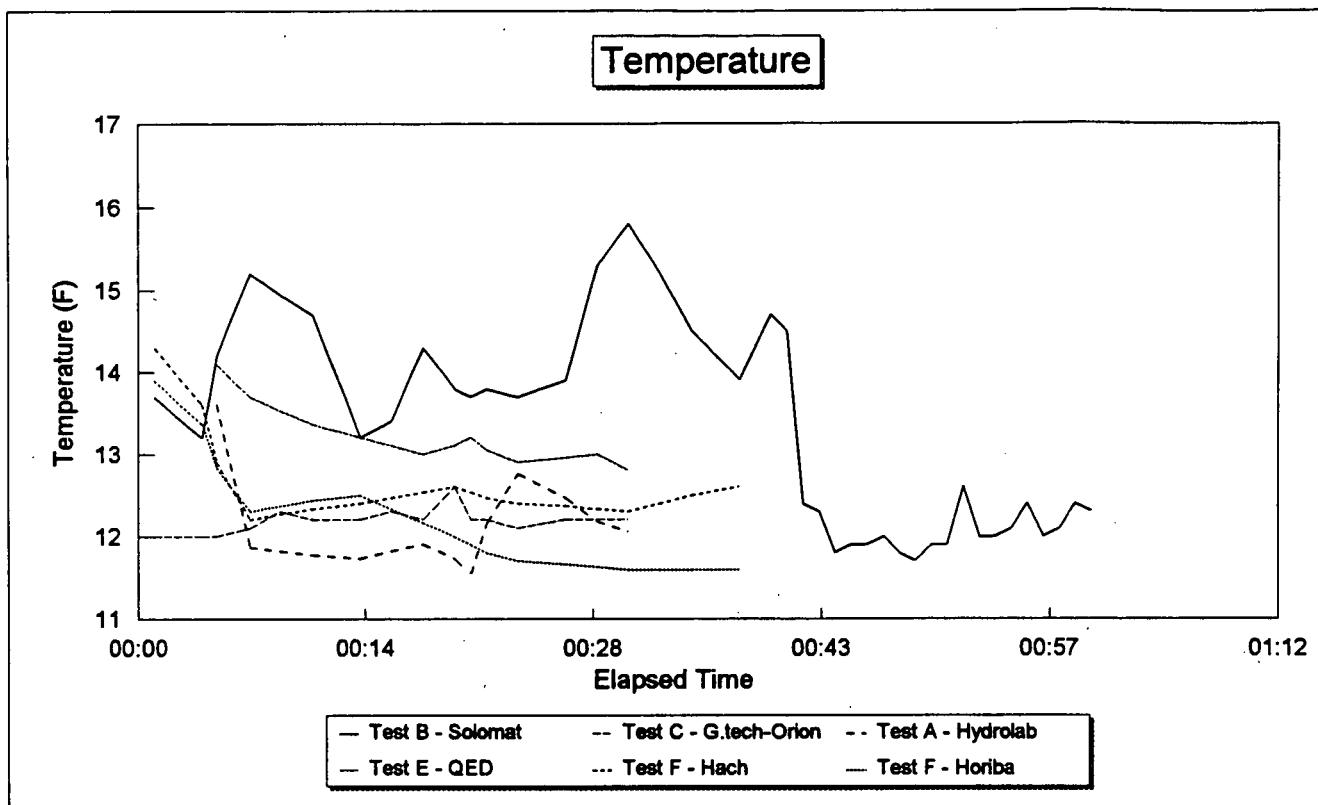
Specific Conductance



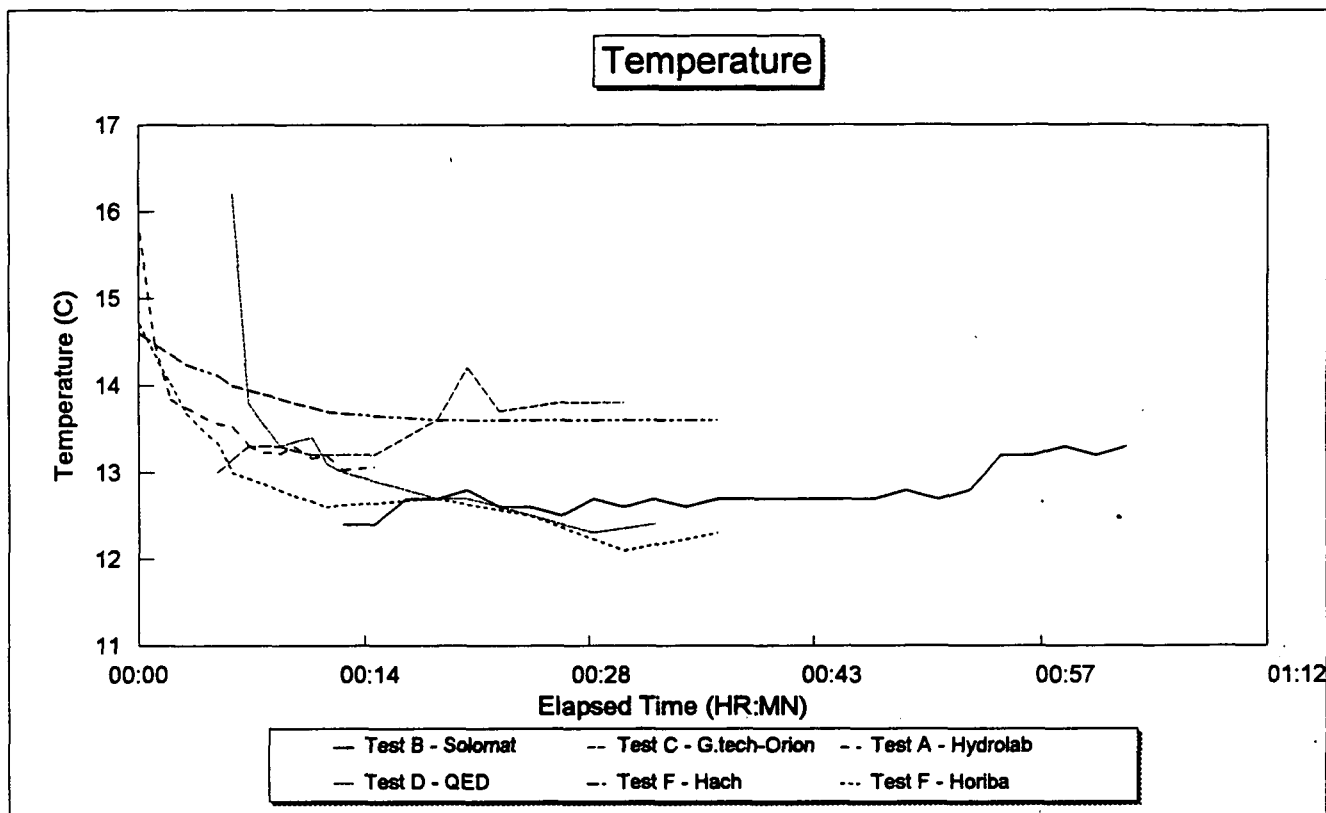
Redox Potential



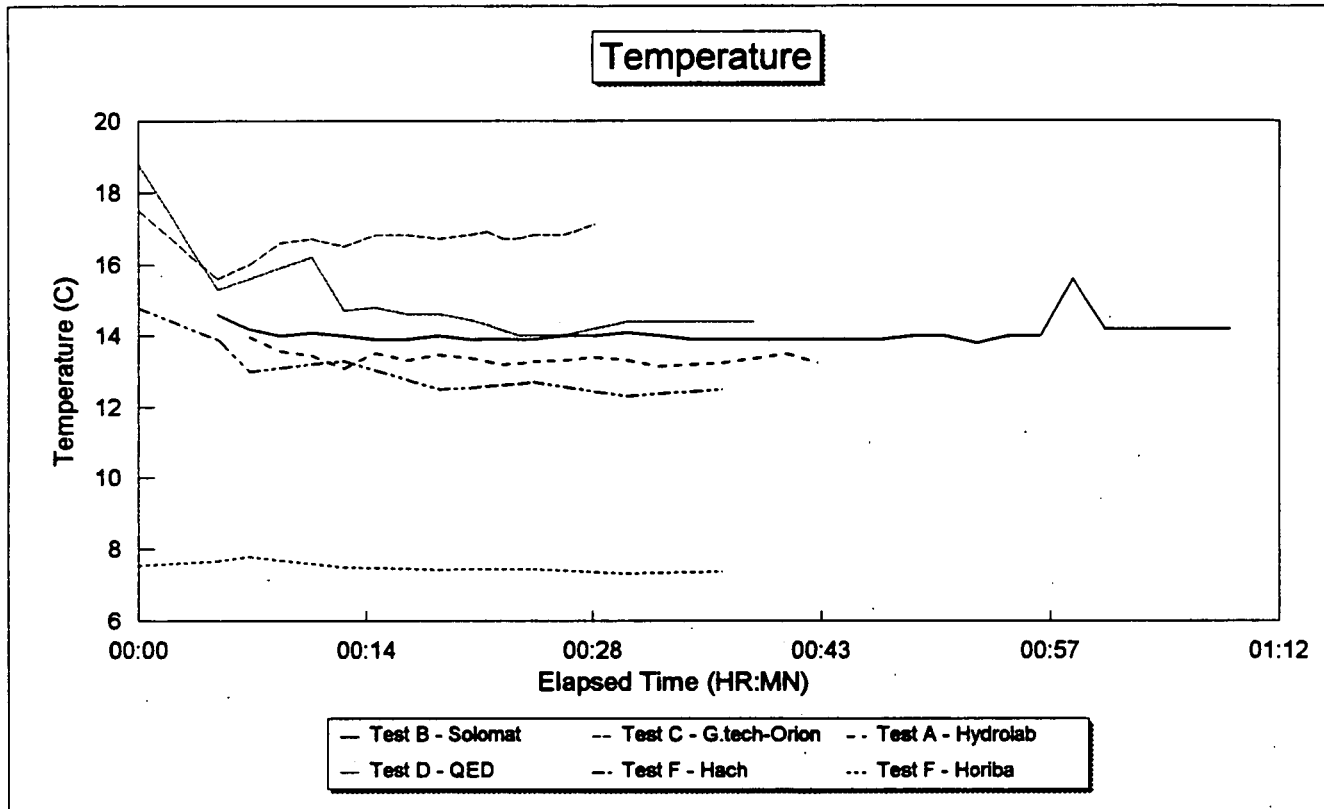
Instrument Comparison by Parameter - Well 41691



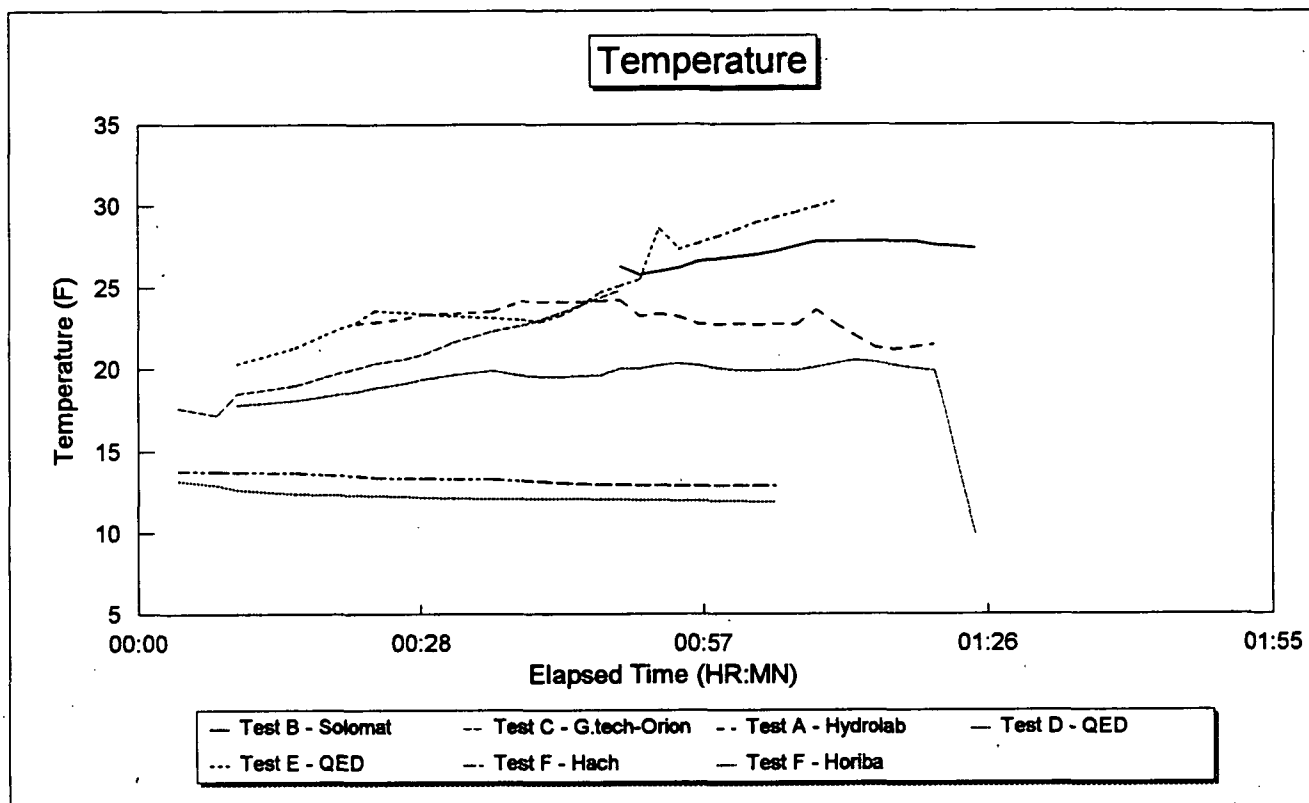
Instrument Comparison by Parameter - Well 1786



Instrument Comparison by Parameter - Well 2587

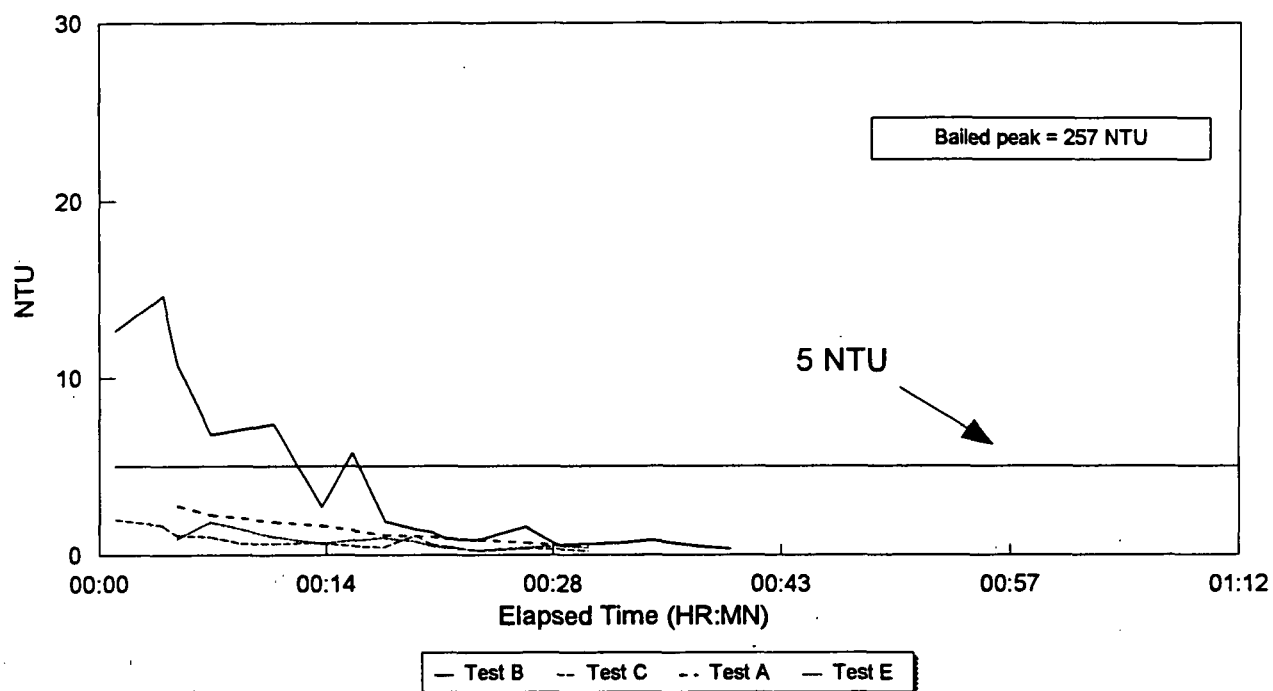


Instrument Comparison by Parameter - Well 20591

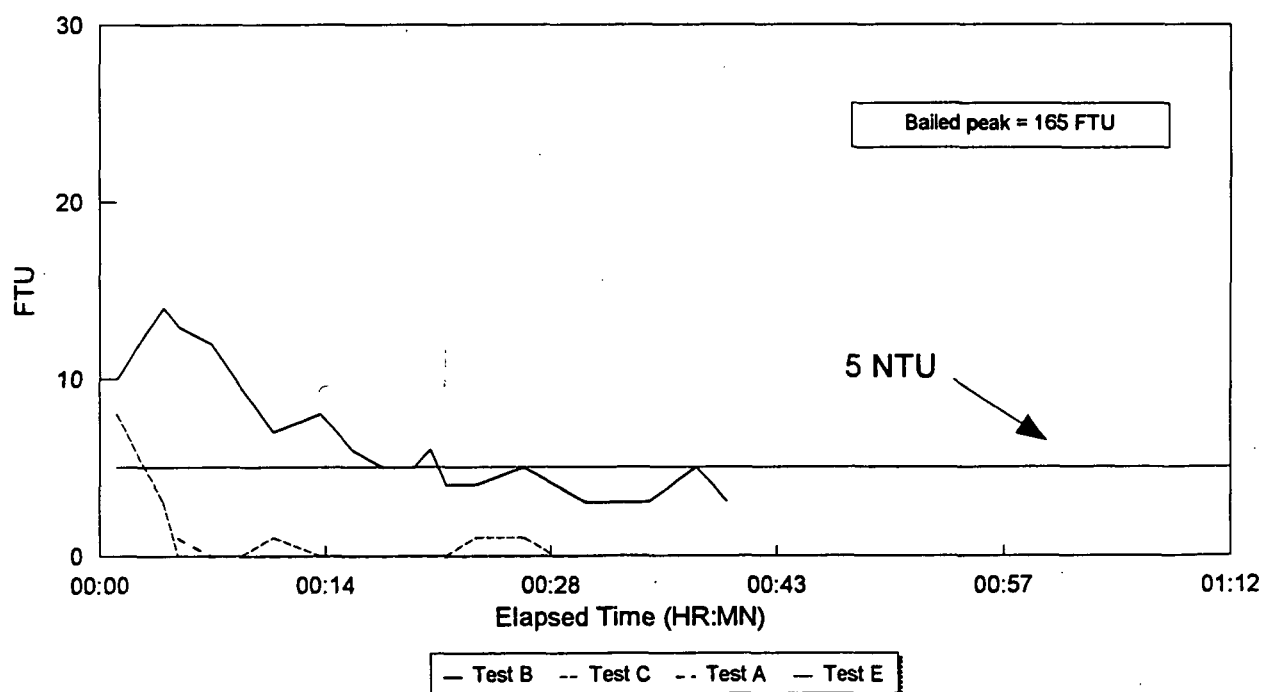


Instrument Comparison by Parameter - Well 41691

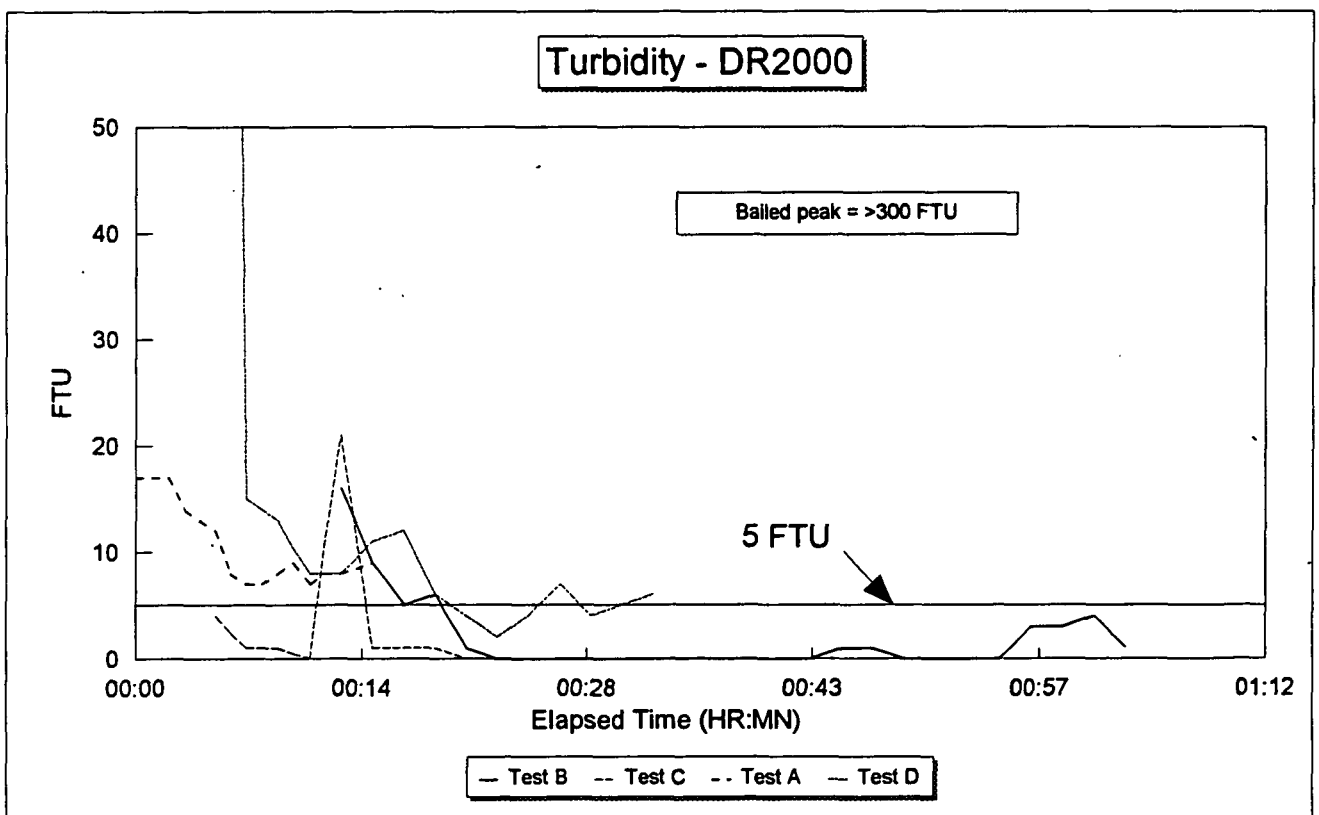
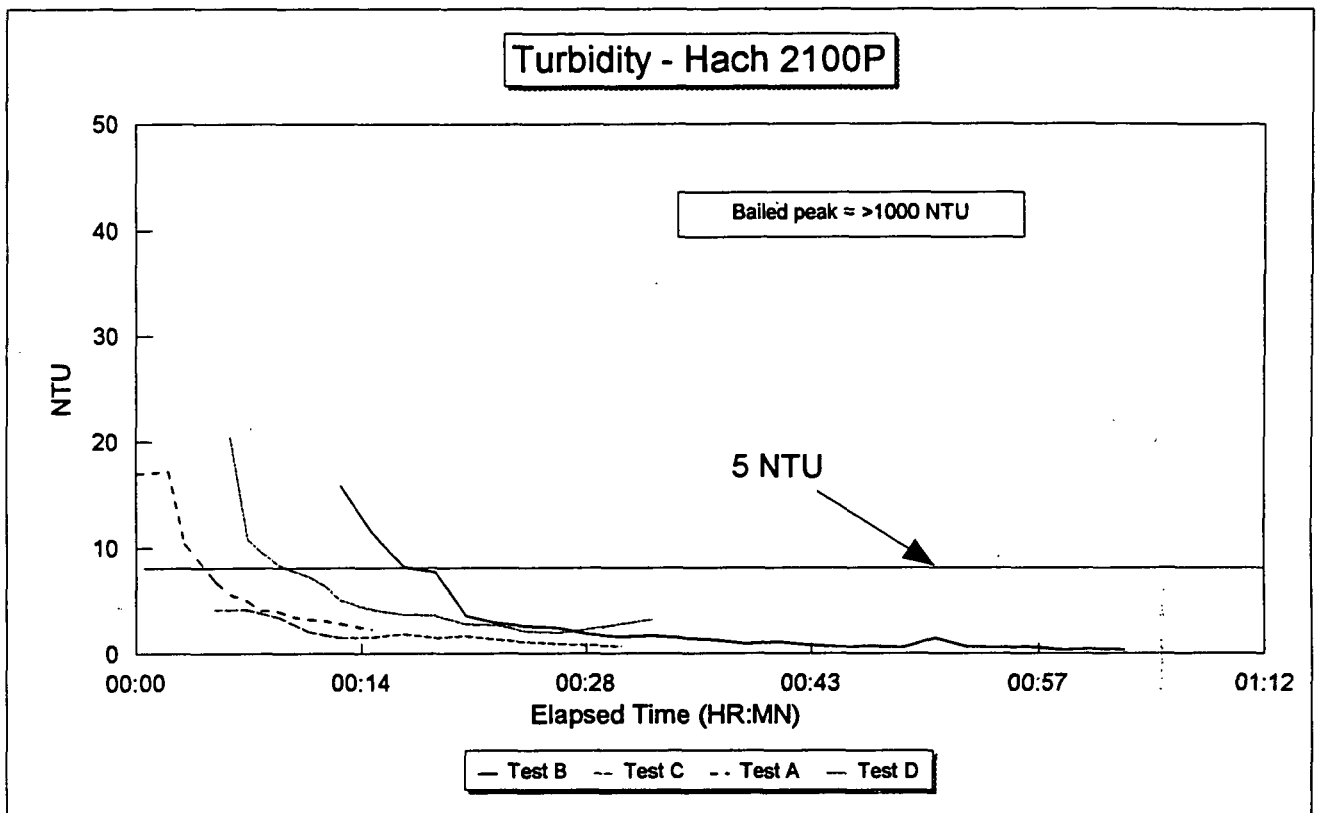
Turbidity - Hach 2100



Turbidity - DR2000

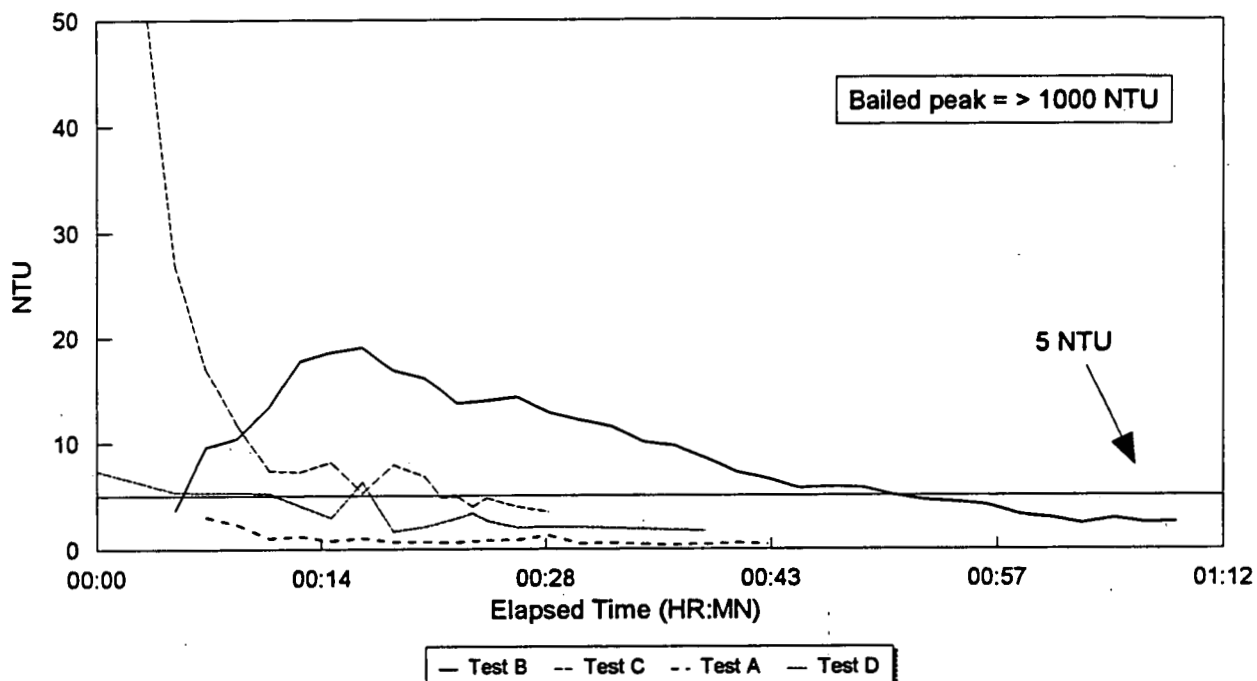


Instrument Comparison by Parameter - Well 1786

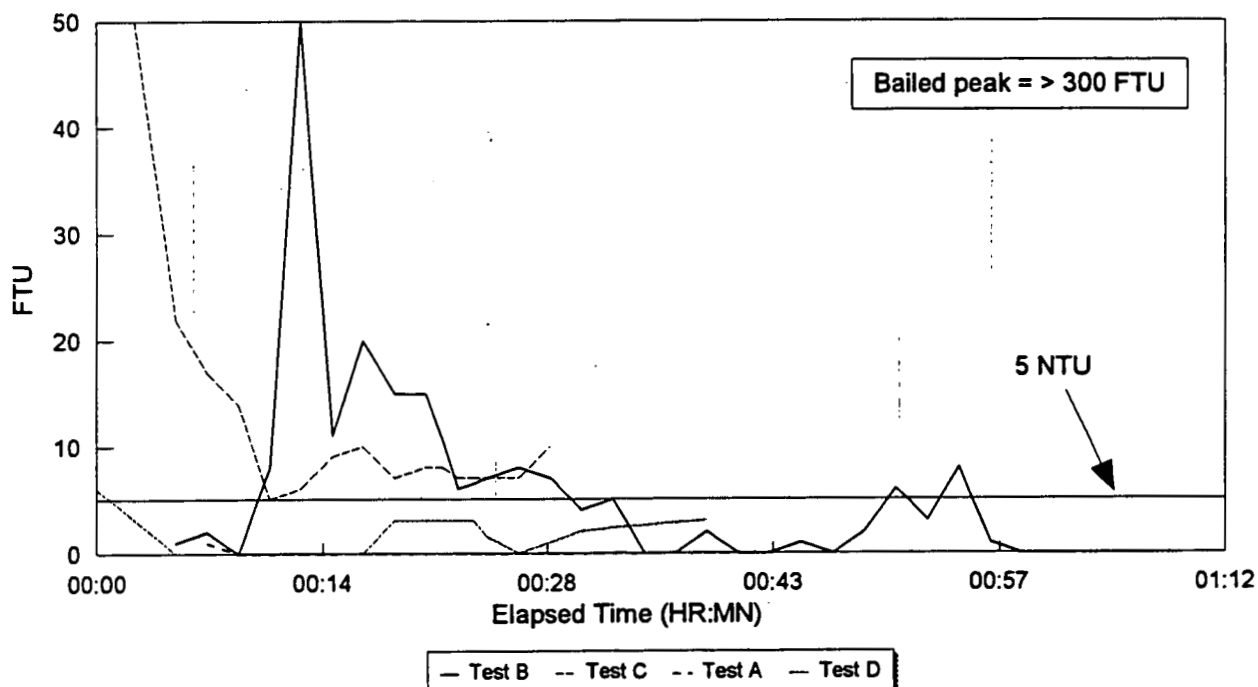


Instrument Comparison by Parameter - Well 2587

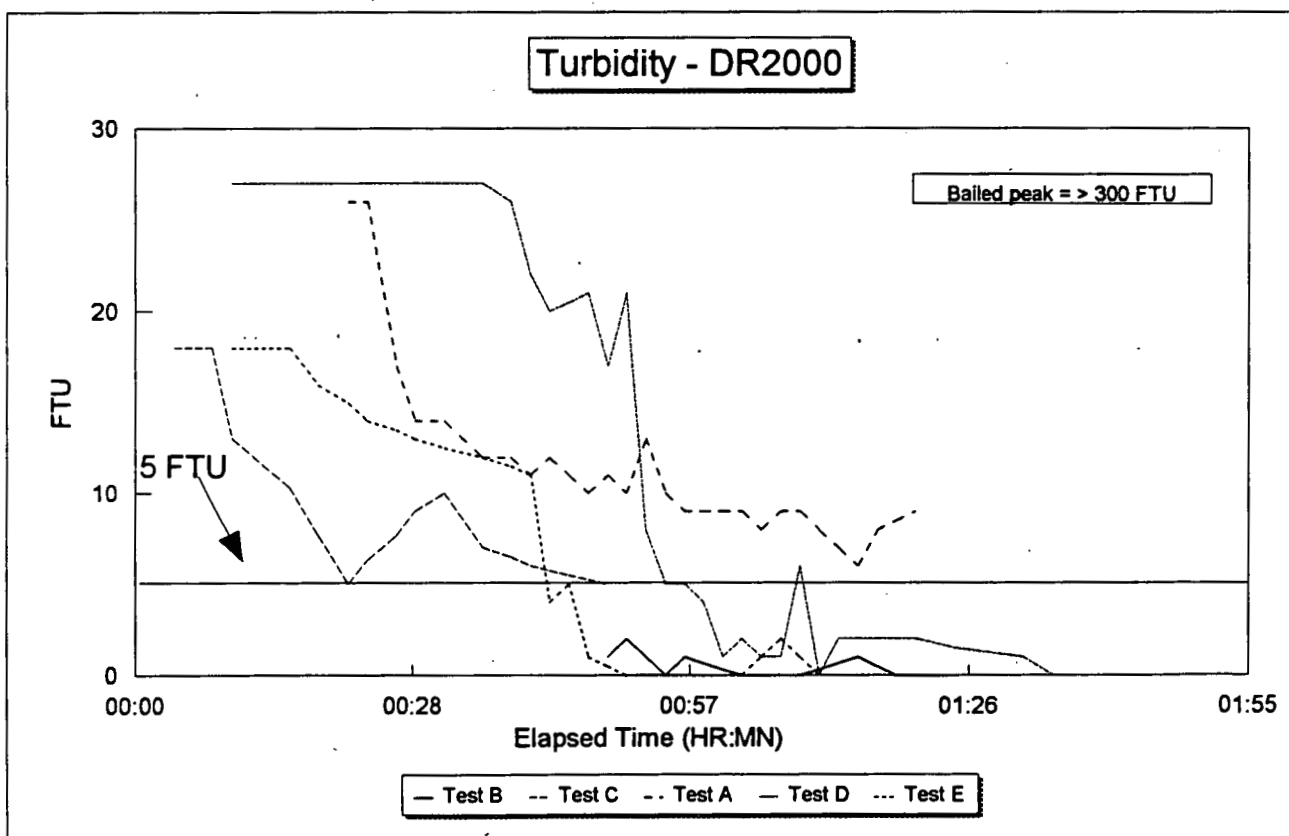
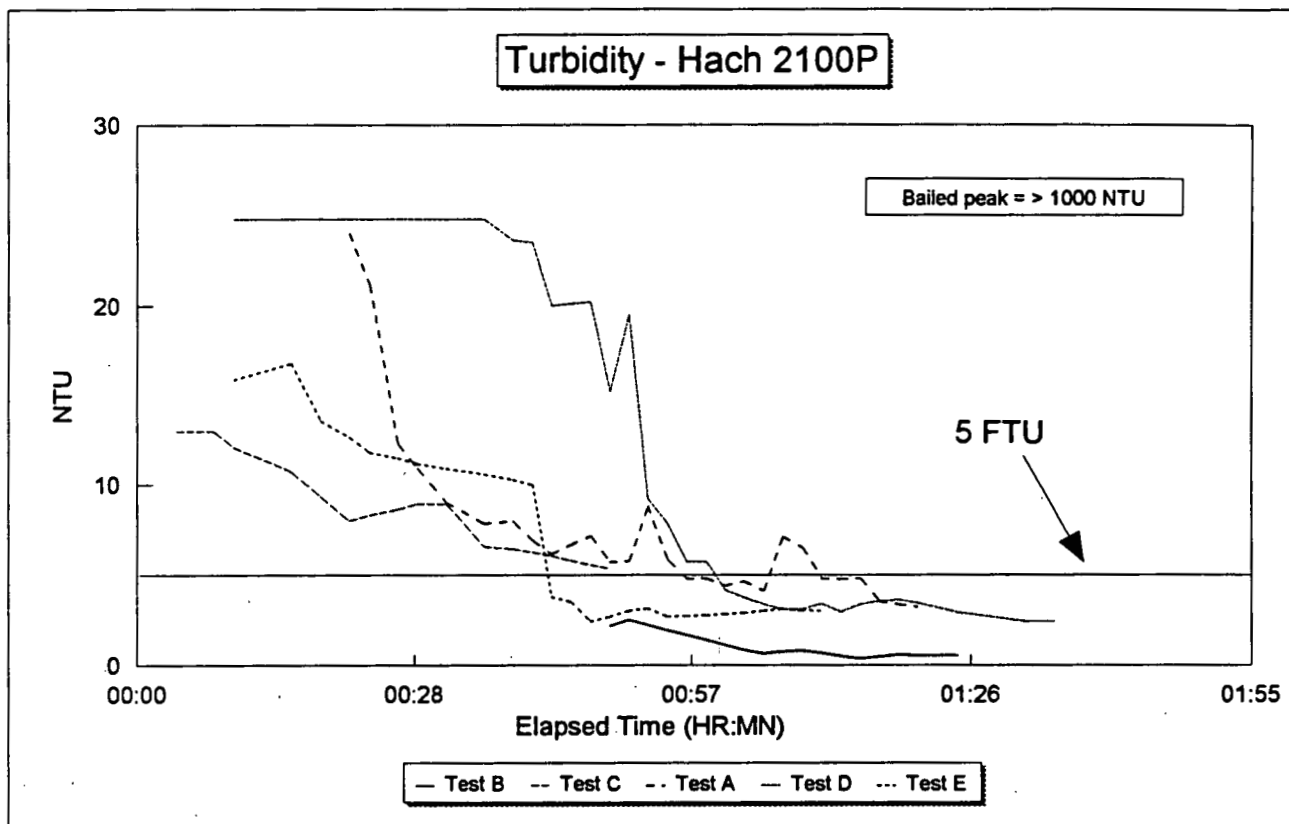
Turbidity - Hach 2100P



Turbidity - DR2000

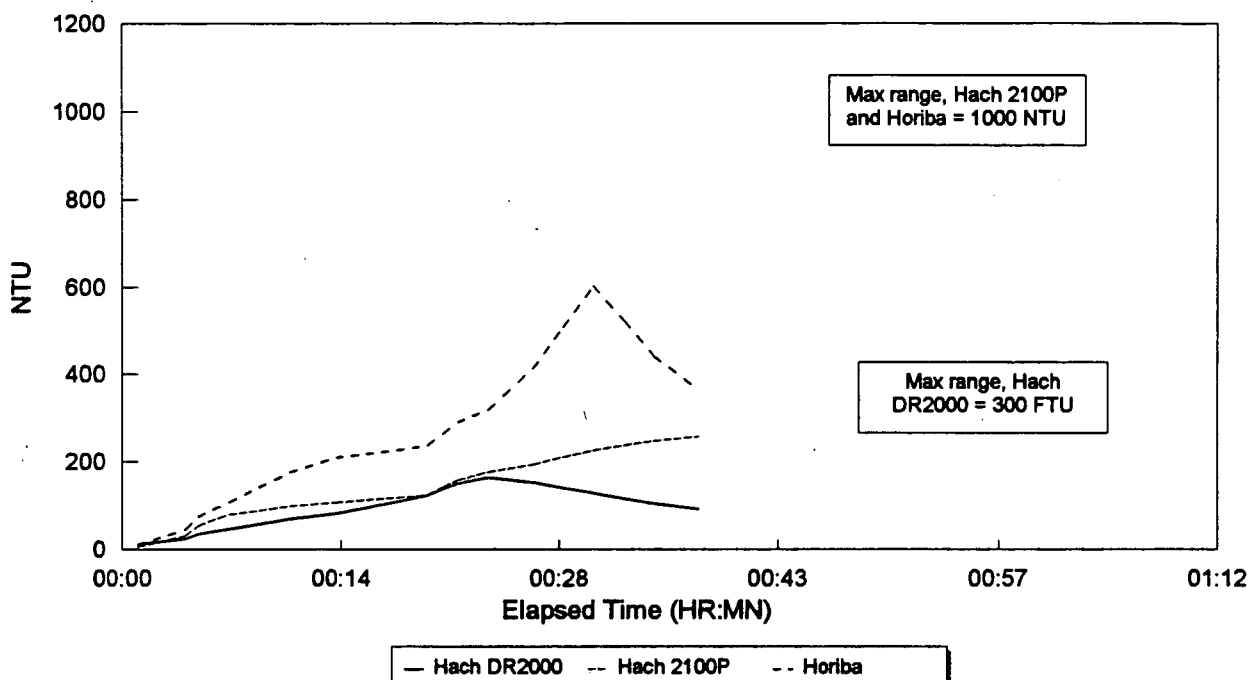


Instrument Comparison by Parameter - Well 20591

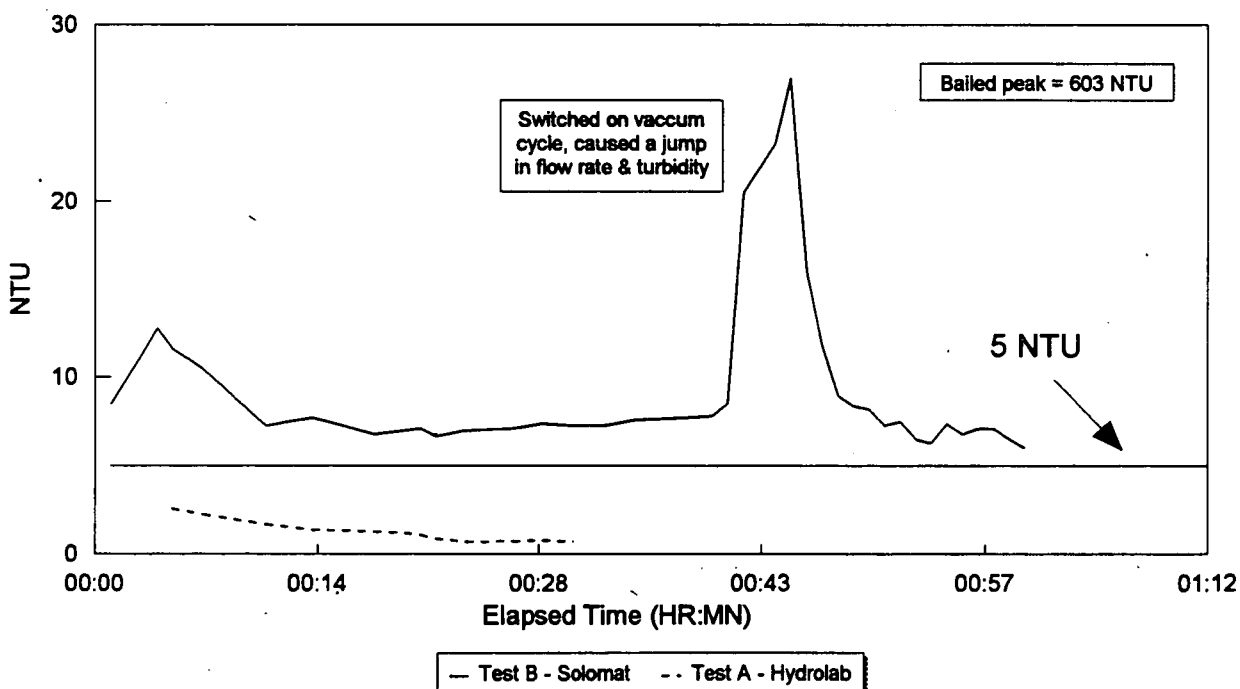


Instrument Comparison by Parameter - Well 41691

Turbidity - Bailed Test

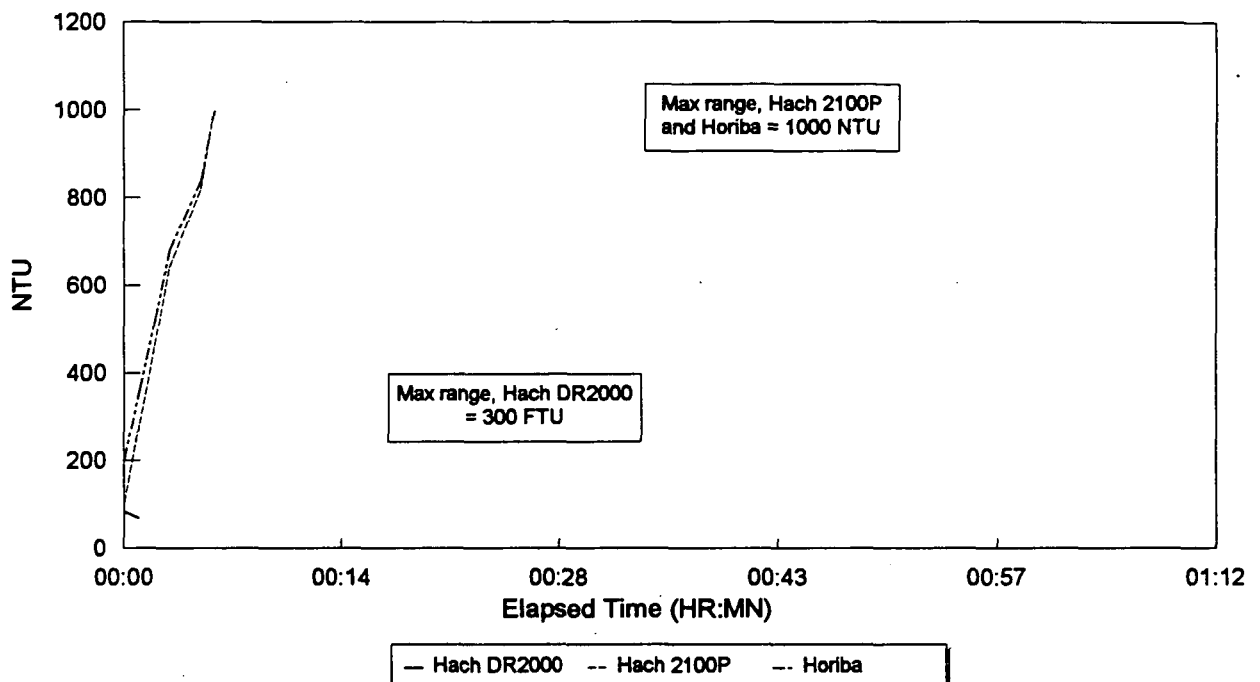


Turbidity - Active Probe

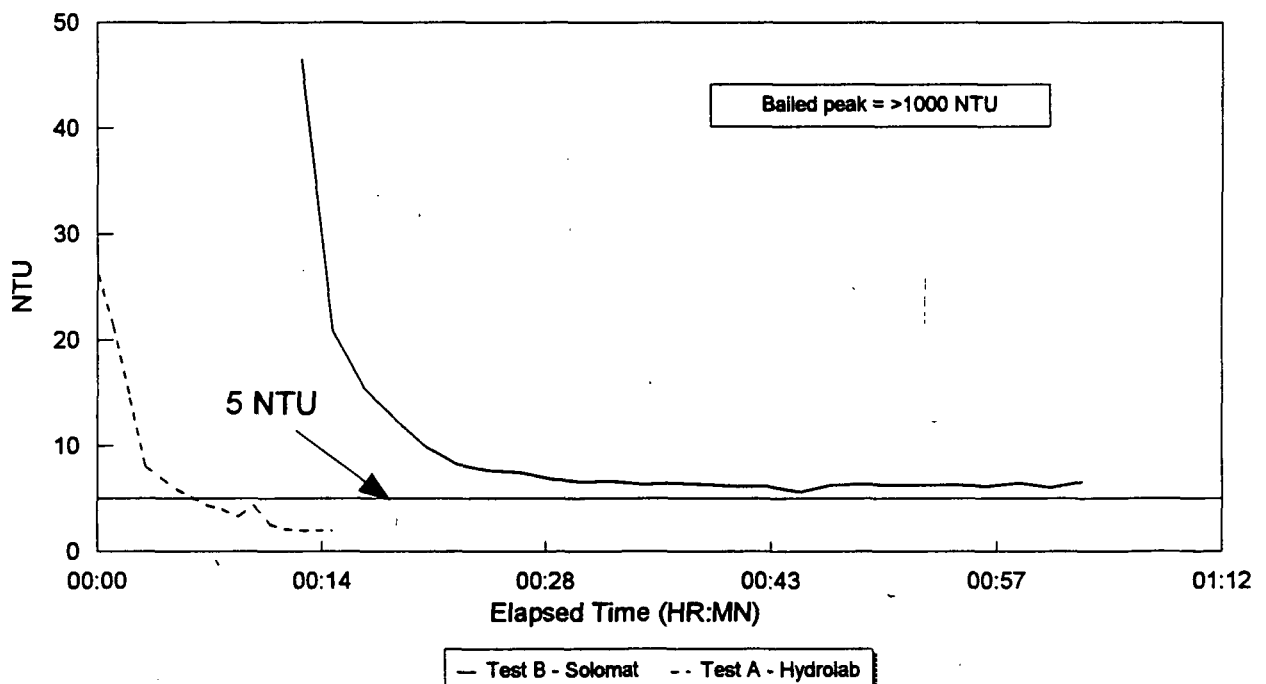


Instrument Comparison by Parameter - Well 1786

Turbidity - Bailed Test

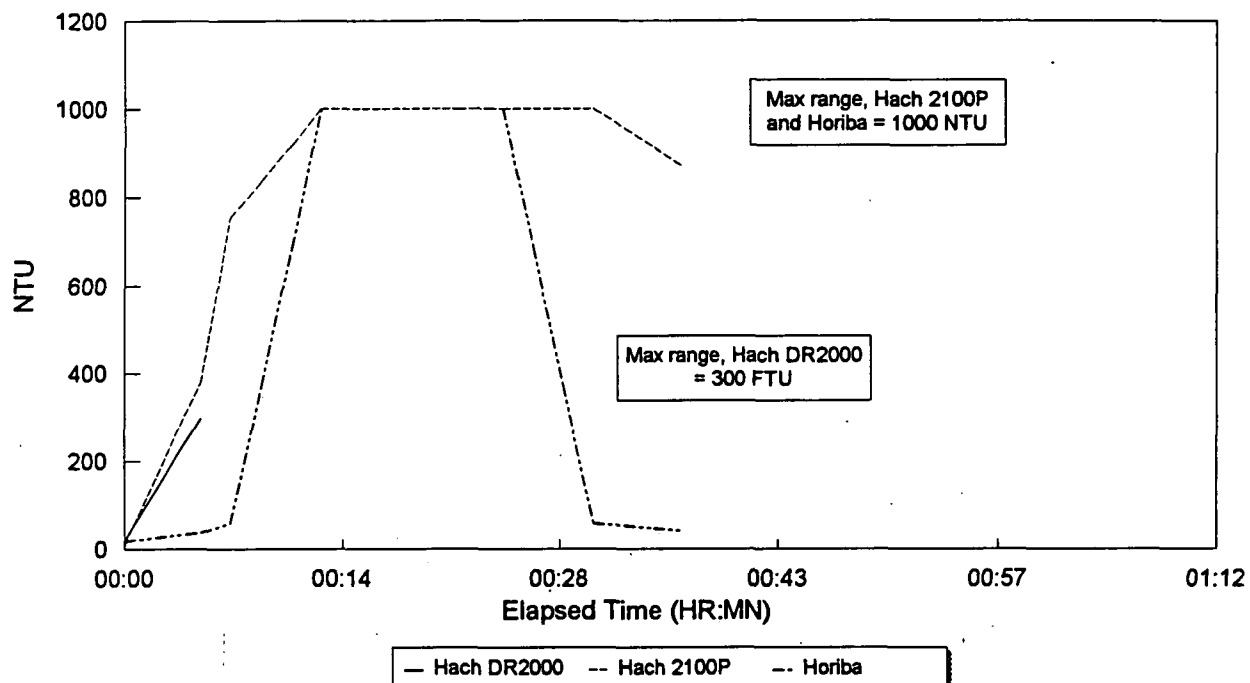


Turbidity - Active Probe

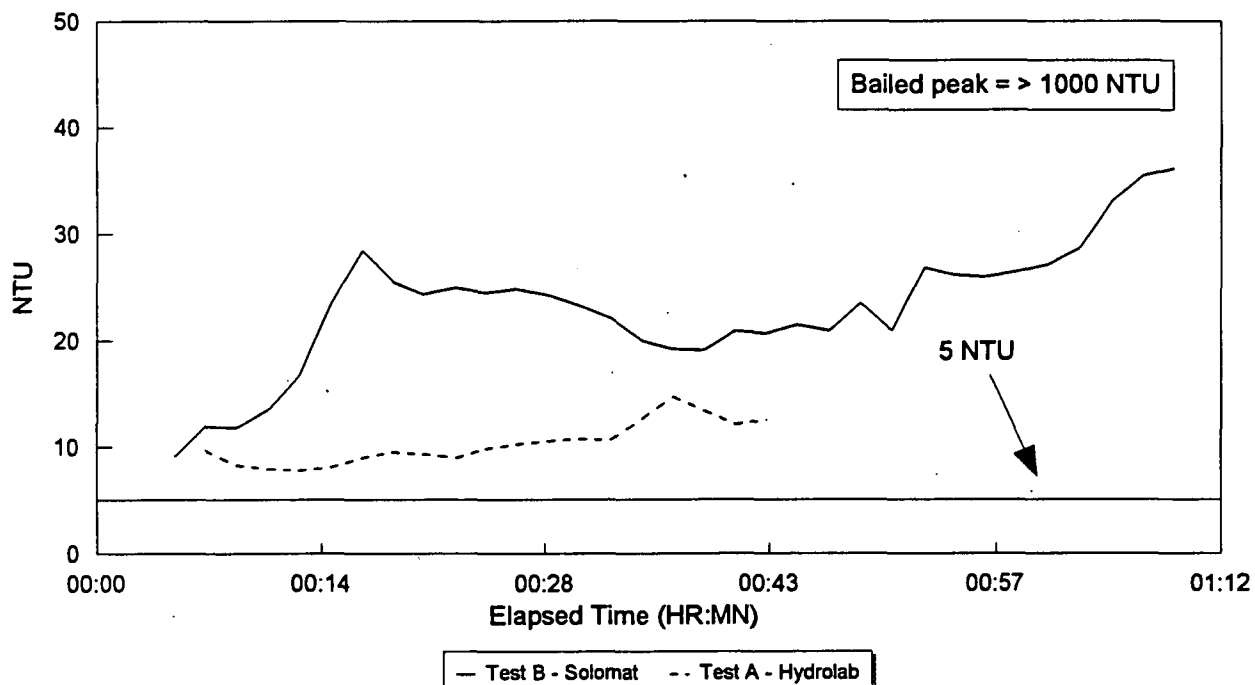


Instrument Comparison by Parameter - Well 2587

Turbidity - Bailed Test

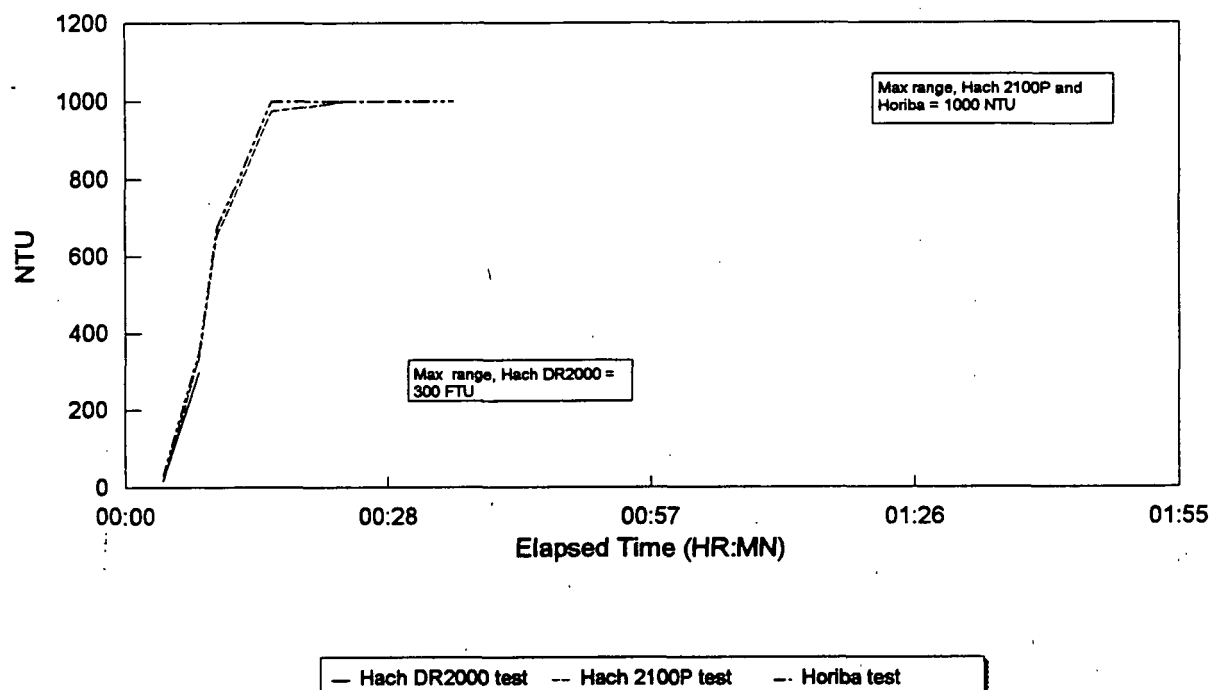


Turbidity - Active Probe

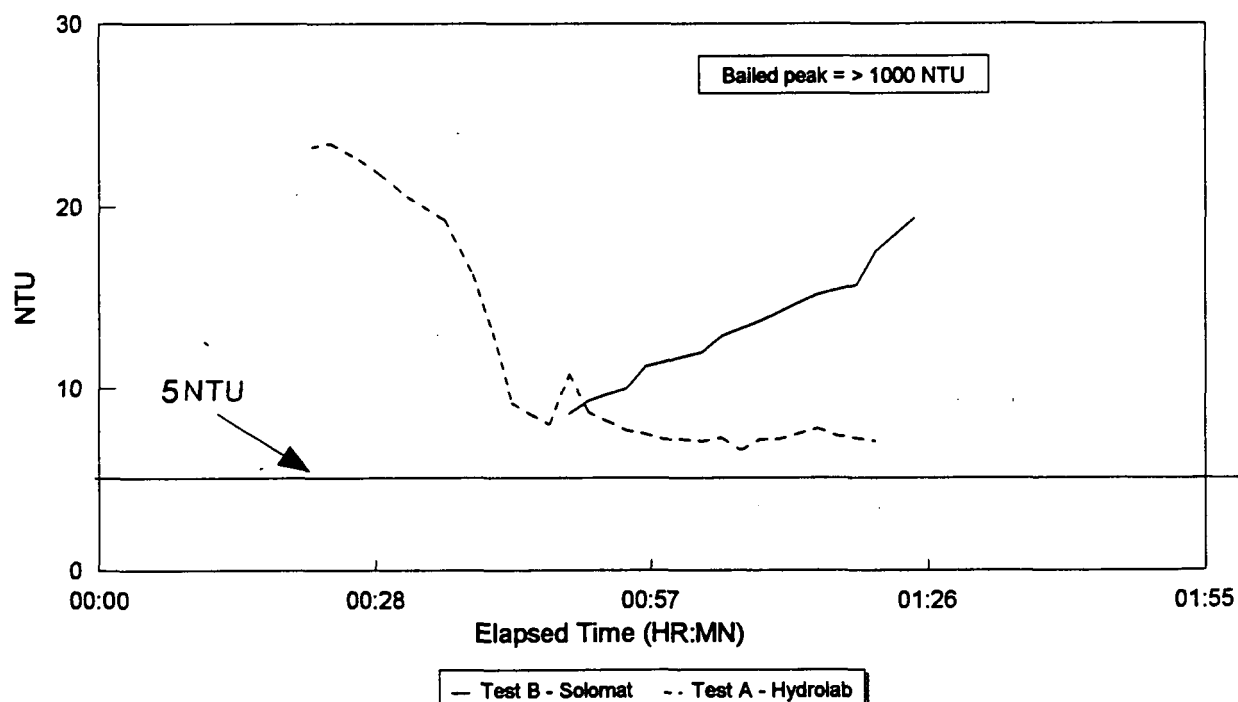


Instrument Comparison by Parameter - Well 20591

Turbidity - Bailed Test

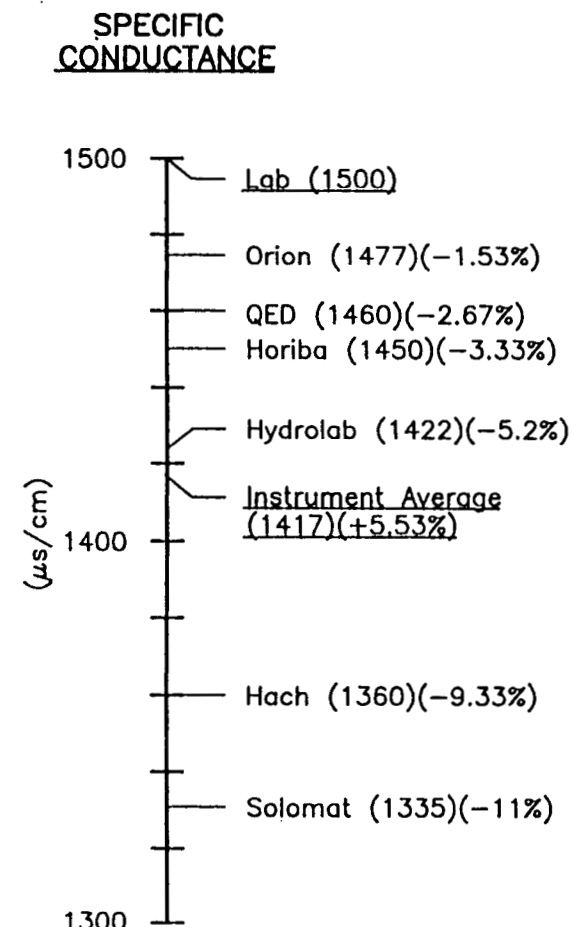
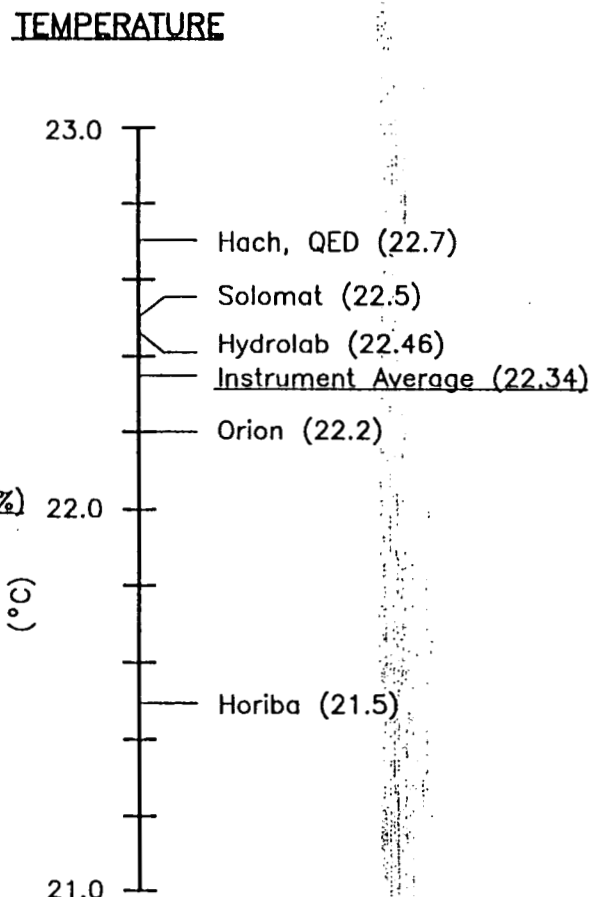
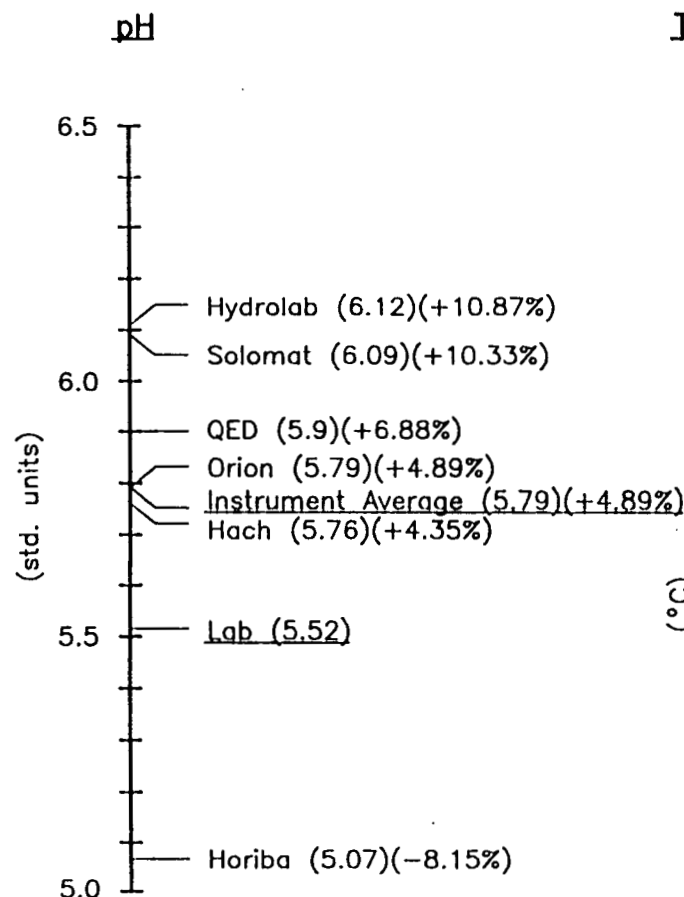


Turbidity - Active Probe



FIELD PARAMETER INSTRUMENT COMPARISONS BENCH TEST RESULTS

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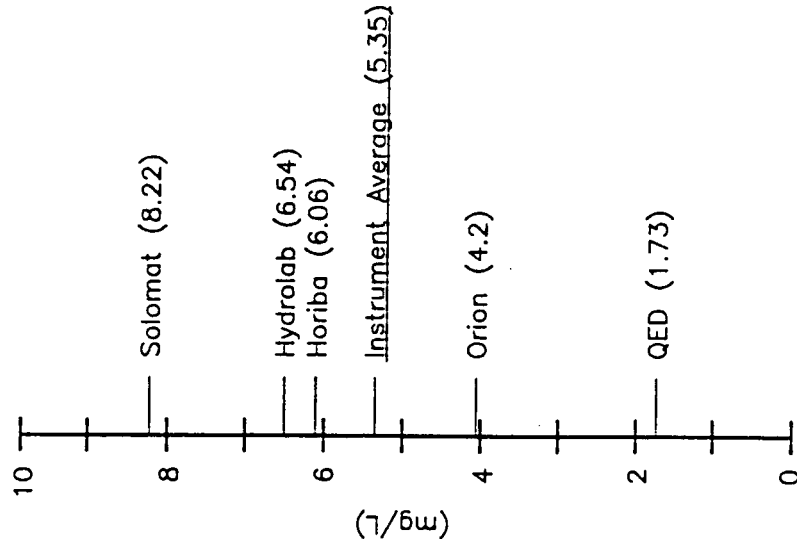
NOTES:

1. pH is temperature sensitive, consequently, laboratory value is used as a gross indicator and may not be indicative of bench value.
2. Shown is "Instrument Manufacturer" (value). Laboratory measurements provided for pH and specific conductance are identified as "Lab" (value). "Instrument Average" (value) is the calculated arithmetic mean of the provided bench test instrument values.
3. % differences are the differences between the measured value and the Lab value.

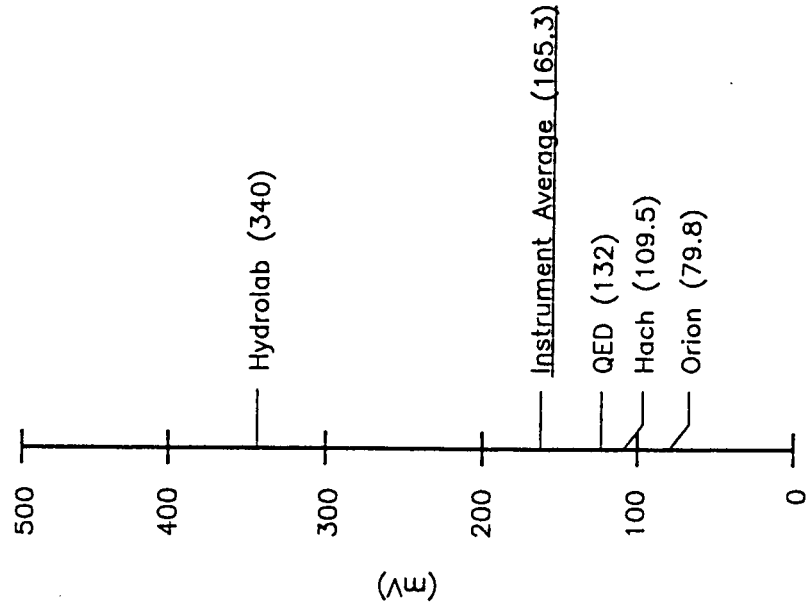
FIELD PARAMETER INSTRUMENT COMPARISONS BENCH TEST RESULTS

(Page 2 of 3)

DISSOLVED
OXYGEN



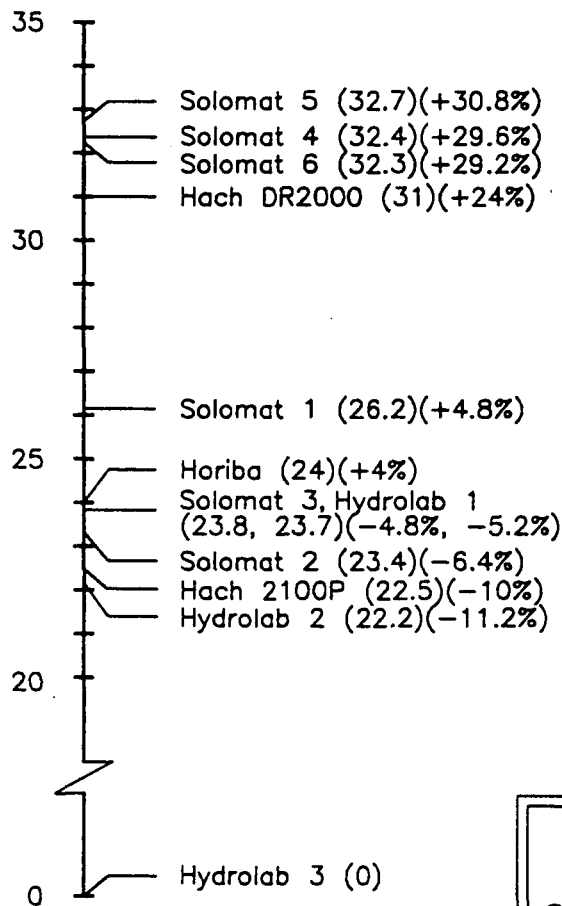
REDOX
POTENTIAL



FIELD PARAMETER INSTRUMENT COMPARISONS BENCH TEST RESULTS

(Page 3 of 3)

TURBIDITY 25 NTU FORMAZIN STANDARD (linear scale)



Configuration Key for Solomat and Hydrolab

Solomat 1	Solution in calibration cup
Solomat 2	Solution in clear flow cell, right side up
Solomat 3	Solution in clear flow cell, upside down
Solomat 4	Solution with screen, right side up
Solomat 5	Solution with screen, upside down
Solomat 6	Solution with screen, right side up, cloth wrapped around cell
Hydrolab 1	Cloth wrapped around cell, upside down
Hydrolab 2	Box around cell, upside down
Hydrolab 3	Unshielded cell, upside down

Percentages indicate difference from standards
See text, Section 4.3.4, for details.

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GRUNDFOS SUBMERSIBLE PUMP TEMPERATURE BENCH TEST

Introduction

There are various pump systems available for effectively sampling groundwater wells at low flow rates. Published articles in the groundwater industry have indicated that pneumatic bladder and electric submersible pumps are effective in purging and sampling wells at flow rates below 1,000 ml/min. The electric submersible Grundfos Redi-Flo2 pump is considered by most researchers to be one of the preferred pumps for use in low flow applications. However, experience described in the journal articles suggest that the electric submersible pump is subject to heating sample waters at low flow rates below 500 ml/min. The effect has been noted as most severe at pumping rates below 300 ml/min.

Some researcher have indicated concern that there is a potential for impacts to sample chemistry by the potential rise in sample temperature. The concern is that concentrations of VOCs in the sample could be decreased through degassing and the concentrations of metals and other organics could be increased through increased dissolution from the raising of saturation levels in the water.

Experimental Objective

The purpose of the experiment was to estimate the amount of heating a groundwater sample undergoes when pumped by the Grundfos pump. The specific objective in conducting the work was to measure the rise in temperature between the water in the sandpack surrounding the well screen and the water as it is discharged from the pump. No assessment is made in this work on the impacts to water chemistry as a result of a temperature rise, nor to how sensitive that impact is to magnitude of the temperature rise.

The Cause of Sample Heating

In order to maintain operating temperatures, the electric motor that drives the pump impellers is designed to dissipate motor heat into the surrounding well water. At higher pumping rates water moving past the motor effectively dissipates that heat. At lower flow rates however, the decreased flow of water across the motor results in a diminished capacity to dissipate that heat. As a consequence, the temperature may rise in the water immediately surrounding that is drawn into the pump. Automated thermal overload protection circuitry built into the pump shuts the unit down when the motor becomes overheated. Experience during the field evaluation of low flow pumping methods suggested that the protection circuit is often the limiting factor in the minimum pumping capability of the unit. That is, the pump rate can be decreased until the pump shuts off. The field evaluation portion of this project demonstrated that the pump will shut down at a flow rate of approximately 150 to 250 ml/min. Consequently, in situations where low flow rate pumping methods require low flow rates, the pump can approach a heat overload condition wherein the pump shuts off and sampling is aborted, or, the pump continues to operate but heats the sample water.

Configuration of Test Apparatus

The experiment was conducted in a laboratory using an artificial "well" designed and constructed to approximate natural groundwater inflow conditions to a well.

The configuration of the well is presented on Figure B-1. The well consisted of a two inch diameter "well" string, 4.5 feet in length, having three feet of machine-cut 0.010-inch slots. The well was affixed to a flat PVC base plate. Around the outside of the well was placed a four-foot long section of 12-inch diameter PVC blank casing, which was also affixed to the base plate. The annular space was filled to a height of 3.5 feet with 16-40 mesh environmental-grade washed sandpack (Colorado Silica bag sand).

As shown of Figure B-1, microthermistors, were placed in the water holding tank, in the annular space approximately two inches below the top of the sandpack, in the sandpack immediately adjacent

to the pump intake, and inside the discharge tubing approximately one foot above the top of the pump. The hole in the tubing into which the thermistor was installed was sealed using a silicone caulk.

Each of the thermistors were connected to an electronic multiplexer, which was in turn connected to a Hewlett Packard HP48CV hand held calculator. The calculator was programmed to activate the thermistors at a preset frequency, log millivolt output from the thermistors, and convert millivolts to temperature in degrees Fahrenheit. The conversion from millivolts to temperature was accomplished using a pretest calibration that established the relationship (using a five-term polynomial equation) between the variables. The data acquisition hardware and software were designed and provided by Matrix 5, Inc., a company specializing in data acquisition and telemetry.

The test well received water from a 55-gallon holding tank that drained by gravity at a controllable rate into the annular space of the test well. The tank was filled with tap water at approximately room temperature (70°F). The duration of the tests was such that a second tank was filled while the first tank was supplying water to the well. The drain tubing and thermistor were shifted to the second tank once the first was depleted. Tanks were only changed when pumping rates were changed in order to minimize the interference effects from different water supply temperatures. An early configuration of the apparatus utilized recirculated water. It was determined however during an initial test run to assess the apparatus, that recirculating test water was not acceptable. It was found that recirculated water showed a constant temperature increase over the duration of the test which interfered with the pump discharge temperature results. It was for that reason that the water was used once and discharged.

Water was discharged from the pump through 3/8-inch tubing. To maintain a consistent head on the pump, the tubing outlet was suspended at a height of approximately 12 feet above ground (10 feet above the pump intake). The head provided the back pressure necessary to more accurately control flow rate. Back pressure was initially controlled with a valve on the discharge tubing. However it was determined that a constant pressure was difficult to maintain and that changes in pumping rates affected the back pressure.

As a result of discussions with Grundfos representatives, the pump was modified to provide the lowest possible pumping rate. The modification involved removing one of its two impellers. Tests were conducted with both the modified pump and with the pump in its standard, two impeller configuration.

An additional modification from the standard pump system configuration involved the use of a pump controller with enhanced pump speed control sensitivity. The enhancement allowed a 10 to 1 refinement in controlling pumping rate over that in the standard controller. This added fineness in the control allowed more precise flow adjustments; a critical need at lower flow rates. Grundfos representatives indicated that the enhanced controller does not modify the way the pump operates, but only provides a finer control for flow rate.

Experimental Method

Two sets of tests were conducted:

- ▶ One test that used the standard 2-impeller configuration provided with the commercially available system; and,
- ▶ Second test with one impeller removed.

Both tests used the enhanced pump controller.

The experimental method consisted of pumping at various flow rates while monitoring water temperature at the several locations in the test apparatus. The tests began at higher flow rates and proceeded to lower flow rates. Flow rates were set at 2,000 ml/min, 1,000 ml/min, 600 ml/min, and at the lowest sustainable rate. The lowest flow rate for the one-impeller test was 190 ml/min. For the two-impeller test the minimum flow rate was 320 ml/min.

Results

Tables B-1 presents the flow rate data for both the 1-impeller and 2-impeller tests. Tables B-2 and B-3 present the temperature data for the 1-impeller and 2-impeller test, respectively. Plots depicting these data are provided in Figures B-2 through B-6.

The plots of the data for the 1-impeller test (Figures B-2 and B-3) show that during the lowest pump rate of 190 ml/min. The temperature monitored in the sandpack near the pump inflow port was stable at approximately 72°F, while the pump outflow temperature increased to approximately 82°F. This temperature rise of approximately 10°F is attributable to heating by the pump.

Plots of the data for the 2-impeller test (Figures B-4 and B-5) indicate that the temperature during the lowest pump rate near the inflow port thermistor was approximately 70°F, while the pump outflow temperature was approximately 75°F. The temperature rise due to heating by the pump was approximately 5°F.

The rise due to pump heating during the 1-impeller tests was about twice the rise during the 2-impeller test. This is likely a result of the lower pumping rate attained during the 1-impeller test.

A regression analysis was performed on flow rate and outflow temperature. The results of the analysis, shown of Figure B-6, demonstrate a correlation in the data for both the 1 and 2 impeller tests. Correlation coefficients (R^2) are greater than 0.95 for both the tests. The plot also demonstrate that the data for the 2-impeller configuration a steeper slope than the data for the 1-impeller configuration. The reason for this is unclear. One explanation may be that the pump works harder with two impellers and heats up more quickly as flow rate is decreased. The maximum measured temperature rise for the 2-impeller test is less than that of the 1-impeller test simply because the minimum flow rate was systematically higher for the 2-impeller test. Alternatively, the difference in the slope of the regression lines may be a result of differences in test conditions, and not a function of the operating conditions of the pump.

Conclusion

Results of the experiment demonstrated that the Grundfos Redi-Flo2 pump can raise temperatures of sample water by up to 10°F. The regression analysis demonstrated that there is an inverse correlation between pump rate and temperature of the water pumped. The minimum tested pump rates were 190 ml/min for the 1-impeller pump configuration, and 320 ml/min for the 2-impeller configuration. Pump shutdown as a result of motor-heat overload is likely to be somewhat below the minimum rates tested. Experience during this bench test and during the field evaluation portion of the project has shown that pump shutdown can be expected at rates at or just below 150 ml/min for the 1-impeller pump, and 250 ml/min for the 2-impeller pump. Pump shutdown is dictated by internal pump temperature, and is dependent factors other than just pump rate. The other factors include in-situ water temperature, duration of pumping, diameter of well, diameter of discharge tubing, pumping head, and wear condition of the pump impellers.

Table B-1
Flow Data

1 Impeller Test

time	flow rate
16:44	3490.40
16:47	1034.66
16:49	2188.18
16:51	2185.79
16:53	2264.15
16:56	2225.52
17:00	2301.50
17:04	2265.01
17:08	2173.91
17:13	2125.40
17:16	2205.88
17:22	2135.23
17:24	2205.88
17:26	2206.69
17:31	942.51
17:37	872.09
17:44	903.61
17:48	888.89
17:52	946.07
17:57	959.69
18:07	975.61
18:11	1032.17
18:13	866.18
18:14	941.32
18:16	924.93
18:19	983.12
18:24	1028.98
18:31	862.69
18:33	772.40
18:34	1060.07
18:35	1028.10
18:36	997.34
18:41	1020.41
18:43	1048.95
18:46	817.33
18:50	945.92
18:56	952.83
18:59	860.22
19:03	859.11
19:07	922.51
19:12	906.21

1 Impeller Test

time	flow rate
19:15	890.34
19:22	529.43
19:26	381.68
19:29	619.13
19:35	641.92
19:40	653.17
19:45	632.84
19:51	621.38
19:57	610.19
20:09	609.88
20:19	618.30
20:29	612.24
20:41	612.68
20:49	667.41
20:59	616.59
21:05	595.36
21:10	572.85
21:15	0.00
21:16	195.00
21:18	0.00
21:32	200.00
21:34	150.00
21:35	0.00
21:43	540.00
21:45	440.00
21:47	390.00
21:48	400.00
21:50	320.00
21:51	340.00
21:56	270.00
21:59	210.00
22:02	190.00
22:05	190.00
22:09	200.00
22:12	195.00
22:19	195.00
22:30	190.00
22:35	190.00
22:39	0.00
22:46	190.00
22:47	0.00

2 Impeller Test

time	flow rate
10:03	929.37
10:06	962.77
10:10	941.18
10:14	930.23
10:20	933.13
10:27	927.21
10:31	940.59
10:34	935.45
10:39	938.97
10:42	952.23
10:49	928.79
10:55	877.45
11:05	575.93
11:11	579.65
11:18	591.42
11:24	588.18
11:28	630.85
11:36	629.00
11:43	625.07
11:49	572.41
11:59	583.20
12:11	600.30
12:21	566.57
12:29	587.89
12:41	600.00
12:50	550.31
13:05	383.53
13:10	390.00
13:12	320.00
13:14	320.00
13:20	320.00
13:27	320.00
13:39	320.00
13:49	320.00
13:59	320.00
14:09	320.00
14:17	300.00
14:32	320.00
14:45	320.00
14:53	300.00
15:02	320.00

Table B-2 page 1 of 5
Temperature Data - 1 Impeller Test

date	time	Temperature			
		outflow tube	inflow port	tank	top of sandpack
8/10/94	16:37:59	71.41	71.75	70.00	73.89
8/10/94	16:41:49	72.23	72.09	70.00	74.37
8/10/94	16:43:49	72.18	72.11	70.00	74.44
8/10/94	16:45:49	72.28	72.11	70.01	74.55
8/10/94	16:47:49	71.35	72.03	70.01	74.53
8/10/94	16:49:49	72.55	72.25	70.01	74.47
8/10/94	16:51:49	71.84	72.31	70.04	70.68
8/10/94	16:53:49	71.50	72.23	70.02	70.70
8/10/94	16:55:49	71.40	72.42	70.03	70.89
8/10/94	16:57:49	71.82	72.23	70.03	70.87
8/10/94	16:59:49	71.78	71.86	70.05	71.09
8/10/94	17:01:49	71.78	71.41	70.03	71.13
8/10/94	17:04:02	71.90	70.98	70.03	70.98
8/10/94	17:07:49	72.01	70.52	70.04	70.81
8/10/94	17:09:49	71.92	70.40	70.03	70.75
8/10/94	17:11:49	72.01	70.40	70.04	70.93
8/10/94	17:13:49	71.97	70.50	70.04	70.84
8/10/94	17:15:49	72.05	70.47	70.05	70.88
8/10/94	17:17:49	72.14	70.56	70.05	70.84
8/10/94	17:19:49	72.19	70.52	70.05	70.96
8/10/94	17:21:49	72.21	70.50	70.08	70.98
8/10/94	17:23:49	72.41	70.44	70.10	71.01
8/10/94	17:25:49	72.34	70.40	70.11	71.00
8/10/94	17:27:49	72.37	70.34	70.12	71.01
8/10/94	17:29:49	72.56	70.33	70.13	70.88
8/10/94	17:32:09	72.39	70.61	70.16	70.97
8/10/94	17:35:49	73.40	70.41	70.19	71.67
8/10/94	17:37:49	73.64	70.44	70.29	71.23
8/10/94	17:39:43	74.51	70.91	70.27	70.98
8/10/94	17:42:02	73.59	70.54	72.81	72.22
8/10/94	17:45:49	73.38	70.53	72.82	73.03
8/10/94	17:47:49	73.79	70.53	72.77	73.06
8/10/94	17:49:49	74.08	70.56	72.79	73.06
8/10/94	17:51:43	74.34	70.56	72.77	73.07
8/10/94	17:53:43	74.46	70.61	72.78	73.02
8/10/94	17:55:49	74.44	70.62	72.77	73.03
8/10/94	17:57:43	74.47	70.63	72.72	73.03
8/10/94	17:59:43	74.50	70.65	72.70	73.02
8/10/94	18:01:40	74.59	70.67	72.69	73.00

Table B-2 page 2 of 5
Temperature Data - 1 Impeller Test

date	time	Temperature			
		outflow tube	inflow port	tank	top of sandpack
8/10/94	18:03:40	74.60	70.69	72.69	72.98
8/10/94	18:05:41	74.67	70.77	72.67	73.10
8/10/94	18:07:46	74.64	70.86	74.45	75.09
8/10/94	18:09:49	74.62	70.81	73.96	74.23
8/10/94	18:11:47	75.03	70.83	73.81	74.04
8/10/94	18:13:38	75.22	70.95	73.81	73.99
8/10/94	18:15:41	75.95	71.09	73.81	73.97
8/10/94	18:17:38	75.62	71.25	73.80	73.95
8/10/94	18:19:38	75.69	71.25	73.80	73.99
8/10/94	18:21:38	75.49	71.25	73.80	73.99
8/10/94	18:23:38	75.56	71.34	73.78	73.97
8/10/94	18:25:38	75.34	71.42	73.47	73.94
8/10/94	18:27:38	75.34	71.53	73.40	73.94
8/10/94	18:29:38	75.47	71.63	73.27	73.93
8/10/94	18:31:38	75.54	71.87	73.36	73.89
8/10/94	18:33:38	75.81	72.00	73.34	73.97
8/10/94	18:35:38	75.91	72.02	73.35	73.93
8/10/94	18:37:53	75.28	72.05	73.34	73.89
8/10/94	18:39:38	75.49	72.07	73.34	73.88
8/10/94	18:41:38	75.51	72.15	73.29	73.86
8/10/94	18:43:38	75.34	72.25	73.32	73.81
8/10/94	18:45:56	75.52	72.52	73.33	73.79
8/10/94	18:47:40	75.69	72.68	73.16	73.76
8/10/94	18:49:38	76.21	73.18	73.17	73.85
8/10/94	18:51:38	75.49	72.60	73.26	73.83
8/10/94	18:53:38	75.68	72.68	73.23	73.79
8/10/94	18:55:38	75.58	72.71	73.40	73.76
8/10/94	18:57:38	75.49	72.79	73.19	73.75
8/10/94	18:59:38	75.49	72.86	73.26	73.74
8/10/94	19:01:38	75.65	72.94	73.11	73.74
8/10/94	19:03:38	75.74	72.89	73.23	73.73
8/10/94	19:05:38	75.64	72.89	73.08	73.75
8/10/94	19:07:38	75.47	72.90	73.20	73.70
8/10/94	19:09:38	75.22	72.93	73.08	73.66
8/10/94	19:11:38	75.31	72.95	73.02	73.61
8/10/94	19:13:38	75.49	72.97	73.34	73.58
8/10/94	19:15:38	75.34	72.99	73.33	73.53
8/10/94	19:17:38	75.46	73.01	73.16	73.43
8/10/94	19:19:38	75.31	73.00	73.01	73.12

Table B-2 page 3 of 5
Temperature Data - 1 Impeller Test

date	time	Temperature			
		outflow tube	inflow port	tank	top of sandpack
8/10/94	19:21:38	75.32	73.01	70.25	72.74
8/10/94	19:23:56	79.82	72.99	70.26	71.55
8/10/94	19:25:44	76.65	73.00	70.31	71.99
8/10/94	19:27:38	76.08	73.03	70.31	72.17
8/10/94	19:29:38	76.69	72.99	70.28	71.90
8/10/94	19:31:38	76.30	72.96	70.26	71.76
8/10/94	19:35:37	74.93	73.01	70.29	71.21
8/10/94	19:37:49	74.10	72.91	70.29	71.42
8/10/94	19:39:49	73.95	72.90	70.27	71.29
8/10/94	19:41:49	73.59	72.92	70.29	71.08
8/10/94	19:43:49	73.70	72.91	70.25	70.99
8/10/94	19:46:02	73.47	72.88	70.27	70.94
8/10/94	19:50:22	73.42	72.89	70.28	70.90
8/10/94	19:53:49	73.16	72.86	70.29	70.91
8/10/94	19:56:25	73.26	72.84	70.27	70.92
8/10/94	19:59:49	73.49	72.79	70.27	70.95
8/10/94	20:02:09	73.31	72.76	70.29	70.96
8/10/94	20:05:49	73.24	72.65	70.29	70.92
8/10/94	20:07:49	73.33	72.58	70.30	70.94
8/10/94	20:09:49	73.08	72.53	70.30	70.95
8/10/94	20:11:49	73.39	72.44	70.29	70.95
8/10/94	20:13:49	73.33	72.37	70.29	70.94
8/10/94	20:16:02	73.24	72.28	70.29	70.95
8/10/94	20:19:49	73.31	72.11	70.30	70.94
8/10/94	20:21:49	73.15	72.01	70.29	70.94
8/10/94	20:23:49	73.32	71.93	70.28	70.94
8/10/94	20:25:49	73.22	71.87	70.27	70.95
8/10/94	20:27:49	73.25	71.78	70.28	70.93
8/10/94	20:29:49	73.13	71.67	70.26	70.93
8/10/94	20:32:09	73.13	71.57	70.26	70.91
8/10/94	20:36:09	73.76	71.35	70.22	70.91
8/10/94	20:39:49	73.17	71.38	70.25	70.92
8/10/94	20:41:49	73.52	71.29	70.23	70.91
8/10/94	20:43:49	73.34	71.25	70.21	70.90
8/10/94	20:45:49	73.10	71.20	70.23	70.90
8/10/94	20:47:49	72.94	71.13	70.24	70.90
8/10/94	20:49:49	72.83	71.06	70.22	70.88
8/10/94	20:51:49	72.94	70.99	70.21	70.87
8/10/94	20:54:09	73.35	70.91	70.20	70.85
8/10/94	20:57:49	73.19	70.87	70.19	70.90
8/10/94	20:59:49	73.28	70.85	70.18	70.89
8/10/94	21:02:16	73.47	70.81	70.17	70.86
8/10/94	21:05:49	73.16	70.74	70.14	70.84
8/10/94	21:08:09	73.82	70.57	70.06	70.82
8/10/94	21:12:22	74.72	70.52	70.91	71.60

Table B-2 page 4 of 5
Temperature Data - 1 Impeller Test

date	time	Temperature			
		outflow tube	inflow port	tank	top of sandpack
8/10/94	21:15:38	77.89	70.71	70.88	71.59
8/10/94	21:17:56	74.72	70.39	70.89	71.49
8/10/94	21:19:40	79.23	70.64	70.89	71.57
8/10/94	21:21:49	82.52	70.67	70.89	71.58
8/10/94	21:23:38	80.15	70.68	70.88	71.57
8/10/94	21:25:49	85.96	70.67	70.89	71.56
8/10/94	21:27:57	74.72	70.67	70.88	71.54
8/10/94	21:29:40	87.97	70.66	70.88	71.50
8/10/94	21:31:53	79.04	70.53	70.87	71.38
8/10/94	21:33:45	83.11	70.53	70.87	71.49
8/10/94	21:37:15	87.98	70.67	70.87	71.50
8/10/94	21:41:37	76.05	70.68	70.85	71.63
8/10/94	21:43:38	75.43	70.70	70.83	71.57
8/10/94	21:45:43	74.31	70.70	70.84	71.57
8/10/94	21:47:38	75.39	70.68	70.84	71.59
8/10/94	21:49:38	76.51	70.72	70.82	71.59
8/10/94	21:51:56	77.75	70.73	70.83	71.56
8/10/94	21:53:40	77.20	70.73	70.82	71.57
8/10/94	21:55:38	76.77	70.71	70.84	71.57
8/10/94	21:57:56	79.09	70.69	70.84	71.55
8/10/94	21:59:47	80.37	70.68	70.83	71.51
8/10/94	22:01:38	81.13	70.68	70.84	71.48
8/10/94	22:03:49	82.17	70.71	70.83	71.42
8/10/94	22:05:56	81.48	70.69	70.82	71.39
8/10/94	22:07:48	81.65	70.69	70.83	71.40
8/10/94	22:09:38	81.43	70.68	70.83	71.46
8/10/94	22:11:38	81.29	70.68	70.84	71.49
8/10/94	22:13:38	82.04	70.68	70.84	71.51
8/10/94	22:15:38	81.49	70.68	70.84	71.52
8/10/94	22:17:42	81.45	70.68	70.84	71.53
8/10/94	22:19:45	81.64	70.68	70.84	71.55
8/10/94	22:21:56	74.72	70.68	70.83	71.55
8/10/94	22:23:48	81.60	70.67	70.83	71.54
8/10/94	22:25:56	74.72	70.66	70.84	71.53
8/10/94	22:27:51	81.52	70.67	70.85	71.52
8/10/94	22:29:56	82.10	70.67	70.86	71.51
8/10/94	22:31:52	81.54	70.66	70.86	71.52
8/10/94	22:33:45	82.45	70.66	70.86	71.52
8/10/94	22:35:38	82.24	70.67	70.87	71.51
8/10/94	22:37:49	82.96	70.67	70.87	71.50
8/10/94	22:39:38	82.55	70.66	70.87	71.49
8/10/94	22:41:49	85.94	70.68	70.89	71.53
8/10/94	22:43:56	74.72	70.68	70.87	71.57
8/10/94	22:45:44	92.72	70.66	70.89	71.55
8/10/94	22:47:53	84.89	70.67	70.88	71.49
8/10/94	22:49:56	91.45	70.66	70.88	71.51

Table B-2 page 5 of 5
Temperature Data - 1 Impeller Test

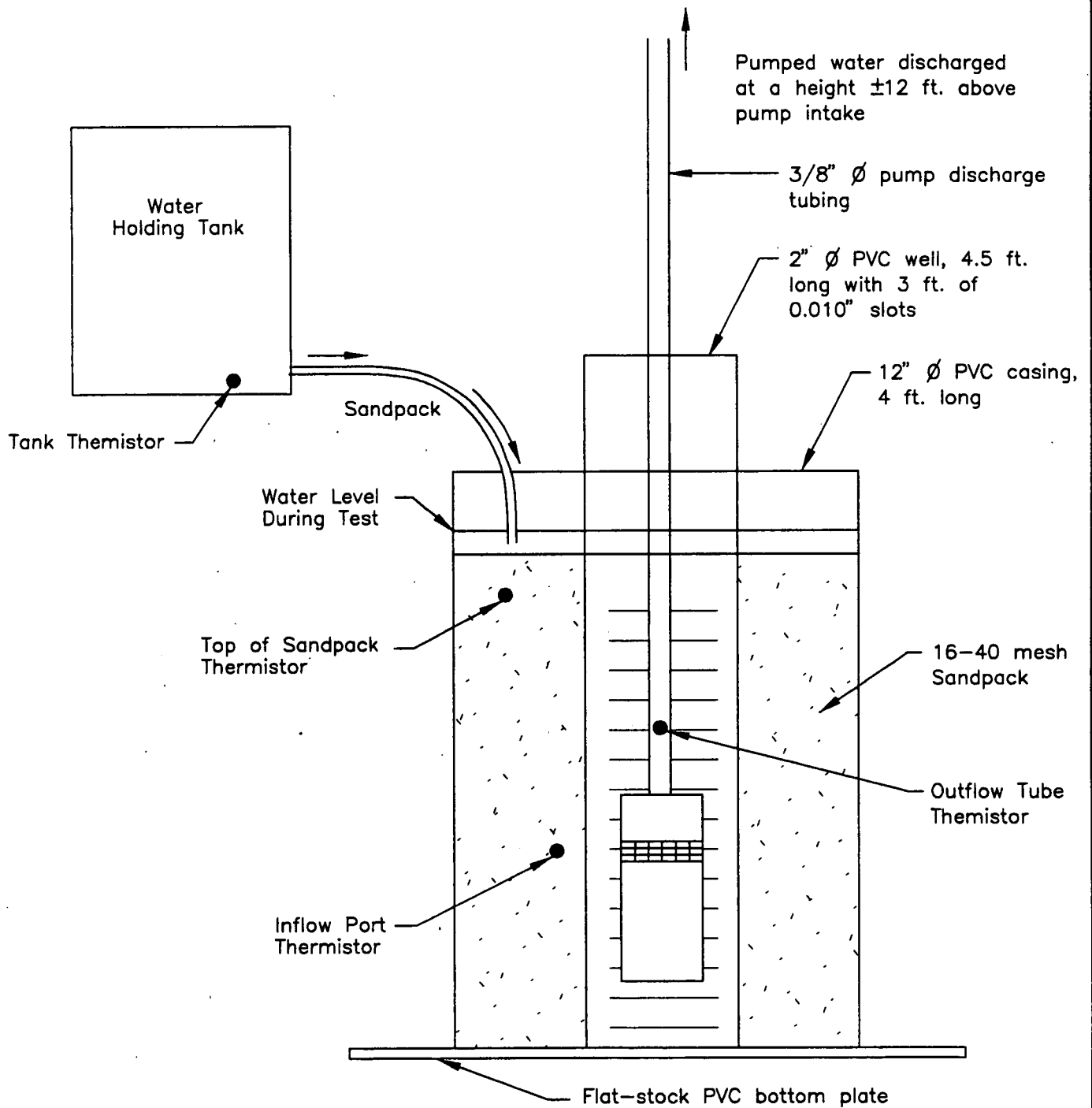
		Temperature			
date	time	outflow tube	inflow port	tank	top of sandpack
8/10/94	22:51:40	88.94	70.67	70.88	71.56
8/10/94	22:53:56	74.72	70.55	70.88	71.43

Table B-3 page 1 of 2
Temperature Data - 2 Impeller Test

date	time	Temperature			
		outflow tube	inflow port	tank	top of sandpack
08/11/94	09:54:00	68.73	68.70	68.17	69.05
08/11/94	09:58:01	68.97	68.43	68.17	69.42
08/11/94	10:02:01	70.19	68.69	68.19	69.71
08/11/94	10:06:01	70.24	68.70	68.20	69.73
08/11/94	10:10:01	70.44	68.71	68.22	69.76
08/11/94	10:14:01	70.58	68.69	68.24	69.78
08/11/94	10:18:01	70.61	68.64	68.29	69.85
08/11/94	10:22:01	70.76	68.60	68.33	69.82
08/11/94	10:26:01	70.74	68.52	68.37	69.84
08/11/94	10:30:14	70.60	68.47	68.40	69.84
08/11/94	10:34:01	70.62	68.47	68.43	69.88
08/11/94	10:38:01	70.94	68.54	68.47	69.93
08/11/94	10:42:01	70.80	68.56	68.51	69.84
08/11/94	10:46:21	70.71	68.60	68.54	69.92
08/11/94	10:50:01	70.83	68.65	68.57	69.94
08/11/94	10:54:01	70.87	68.71	68.60	69.92
08/11/94	10:58:01	70.85	68.78	68.63	70.00
08/11/94	11:02:14	71.07	68.84	68.66	69.94
08/11/94	11:06:34	73.58	68.85	67.79	69.14
08/11/94	11:10:14	71.51	68.89	67.78	69.16
08/11/94	11:14:21	71.18	68.91	67.79	69.16
08/11/94	11:18:01	70.98	68.95	67.80	69.19
08/11/94	11:22:21	71.02	68.97	67.83	69.20
08/11/94	11:26:34	74.72	69.00	67.85	69.24
08/11/94	11:30:01	70.93	69.02	67.88	69.26
08/11/94	11:34:34	70.74	69.04	67.89	69.29
08/11/94	11:38:37	74.72	69.07	67.93	69.32
08/11/94	11:42:21	71.03	69.08	67.79	69.35
08/11/94	11:46:01	71.04	69.09	67.76	69.38
08/11/94	11:50:21	71.08	69.08	67.93	69.41
08/11/94	11:54:01	71.28	69.08	68.01	69.43
08/11/94	11:58:34	74.72	69.05	68.07	69.48
08/11/94	12:02:27	71.12	69.03	68.12	69.52
08/11/94	12:06:14	71.17	68.99	68.15	69.55
08/11/94	12:10:34	74.72	68.96	68.21	69.59
08/11/94	12:14:34	74.72	68.96	68.26	69.64
08/11/94	12:18:34	71.41	68.95	68.31	69.65
08/11/94	12:22:08	71.25	68.93	68.33	69.72
08/11/94	12:26:27	71.59	68.87	68.37	69.76
08/11/94	12:30:34	71.61	68.94	68.43	69.79
08/11/94	12:34:14	71.40	68.93	68.46	69.85
08/11/94	12:38:27	71.61	68.93	68.52	69.93
08/11/94	12:42:14	71.47	68.96	68.58	69.99
08/11/94	12:46:01	71.61	68.94	68.62	70.05
08/11/94	12:50:14	71.78	68.95	68.67	70.13
08/11/94	12:54:34	74.72	68.99	68.74	70.18

Table B-3 page 2 of 2
Temperature Data - 2 Impeller Test

date	time	Temperature			
		outflow tube	inflow port	tank	top of sandpack
08/11/94	12:58:08	71.64	69.02	68.84	70.18
08/11/94	13:02:41	74.72	68.97	67.92	70.16
08/11/94	13:06:34	74.72	69.06	67.94	69.53
08/11/94	13:10:08	73.18	69.08	67.98	69.34
08/11/94	13:14:31	74.72	69.11	68.00	69.29
08/11/94	13:18:14	73.80	69.13	68.00	69.30
08/11/94	13:21:49	74.94	69.16	68.02	69.31
08/11/94	13:24:01	73.61	69.18	68.06	69.33
08/11/94	13:28:14	73.35	69.21	68.06	69.35
08/11/94	13:32:01	73.55	69.22	68.08	69.36
08/11/94	13:36:01	75.58	69.25	68.12	69.42
08/11/94	13:40:34	74.72	69.28	68.13	69.42
08/11/94	13:44:34	73.57	69.31	68.16	69.45
08/11/94	13:48:28	74.72	69.34	68.18	69.46
08/11/94	13:52:27	73.13	69.39	68.19	69.47
08/11/94	13:56:27	74.72	69.40	68.21	69.49
08/11/94	14:01:35	74.72	69.43	68.26	69.52
08/11/94	14:04:54	74.72	69.52	68.28	69.54
08/11/94	14:08:16	75.09	69.47	68.30	69.55
08/11/94	14:11:39	75.04	69.49	68.32	69.59
08/11/94	14:14:27	74.72	69.51	68.34	69.60
08/11/94	14:18:08	74.29	69.51	68.37	69.62
08/11/94	14:26:25	74.16	69.54	68.43	69.69
08/11/94	14:30:27	73.38	69.57	68.44	69.73
08/11/94	14:34:21	73.53	69.58	68.47	69.74
08/11/94	14:38:16	74.52	69.45	68.50	69.91
08/11/94	14:41:43	78.28	69.56	68.54	69.99
08/11/94	14:44:02	76.99	69.56	68.54	69.92
08/11/94	14:48:27	74.72	69.60	68.57	69.85
08/11/94	14:52:22	74.91	69.55	68.61	70.02
08/11/94	14:56:20	74.72	69.60	68.63	69.91
08/11/94	15:00:28	73.62	69.62	68.66	69.94
08/11/94	15:04:16	74.72	69.62	68.69	69.97



EG&G ROCKY FLATS

Rocky Flats Environmental Technology Site, Golden Colorado

CONFIGURATION OF TEST APPARATUS

DATE : 9/7/94

FIGURE : B-1

Figure B-2
Grundfos Temperature Test - 08/10/94
1 Impeller Test

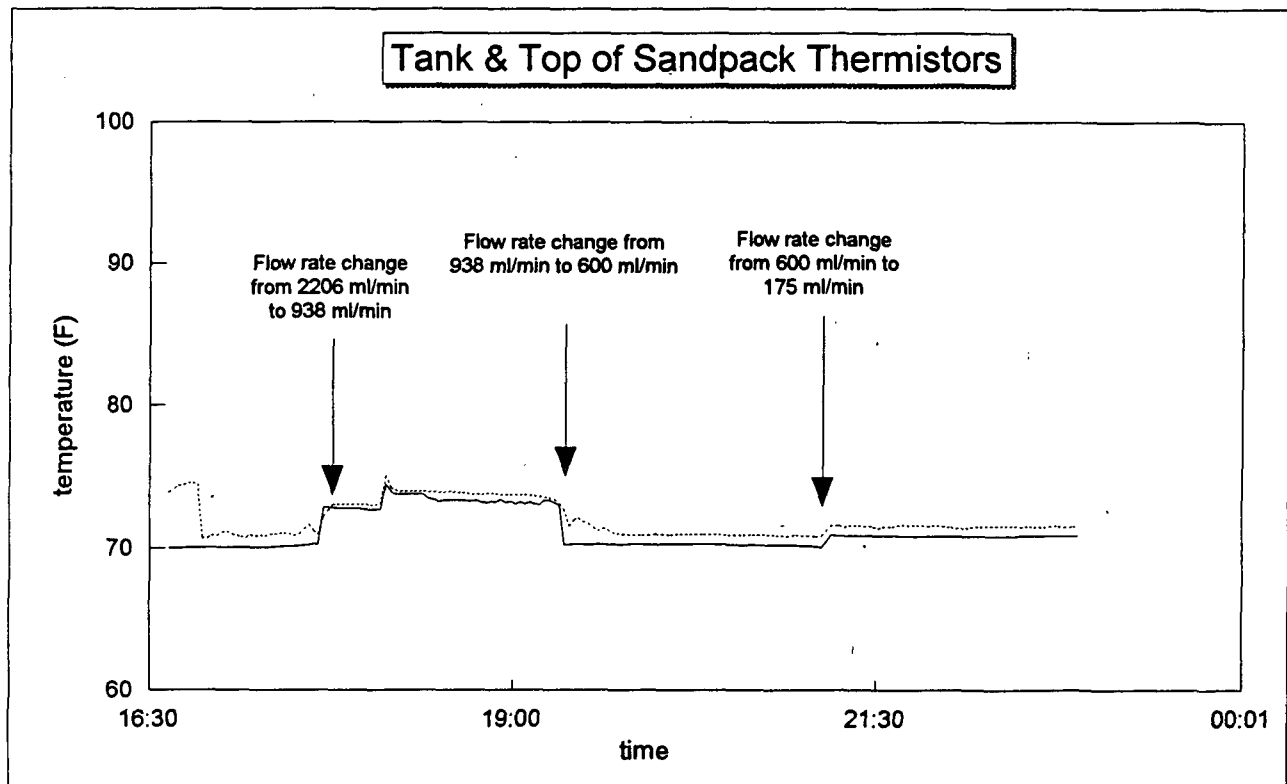
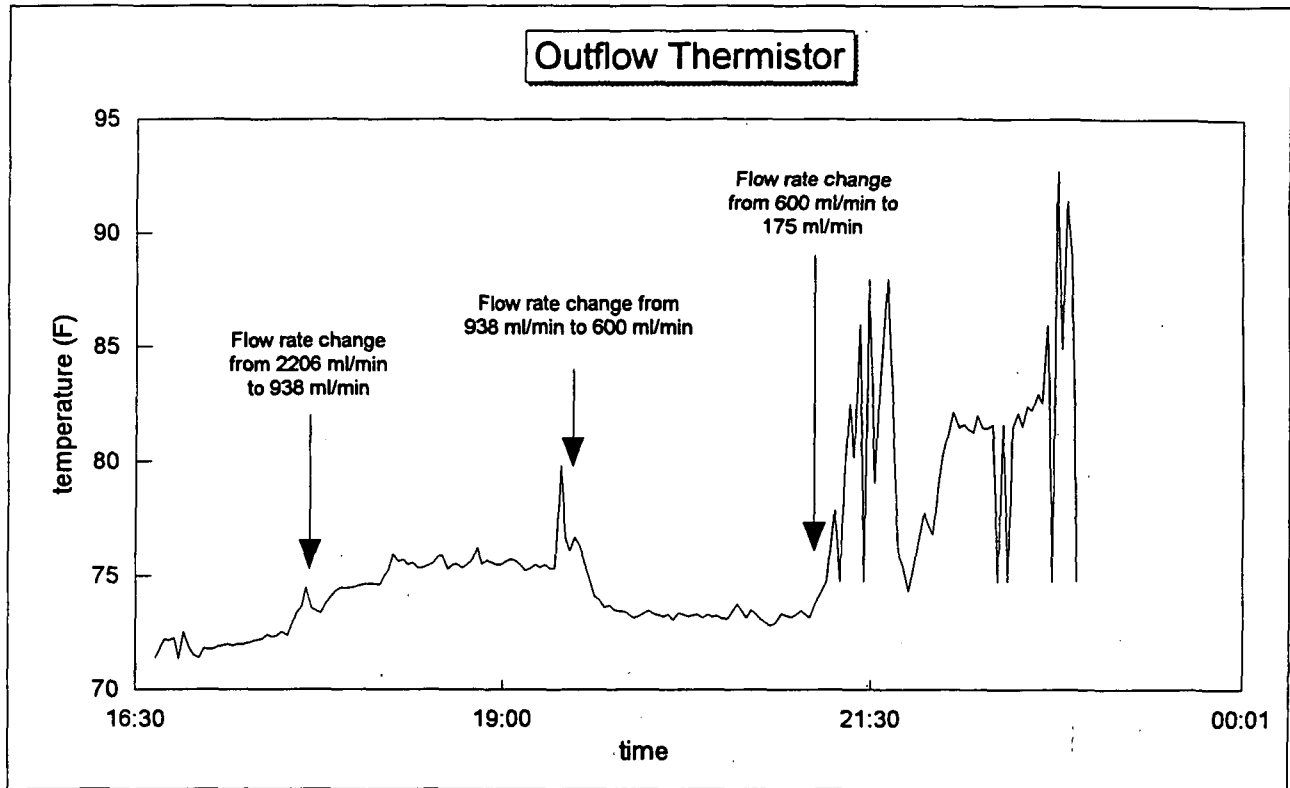


Figure B-3
Grundfos Temperature Test - 08/10/94
1 Impeller Test

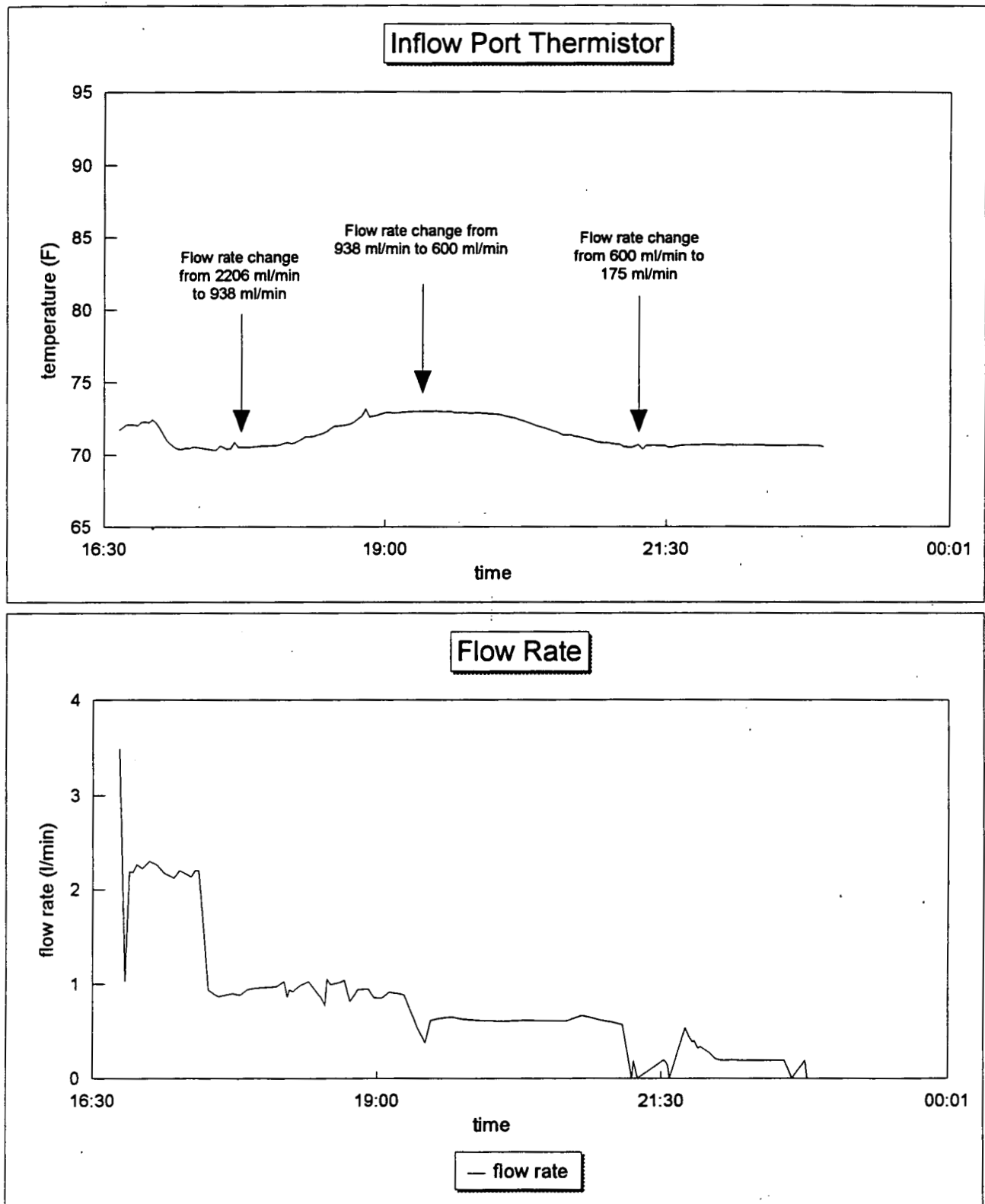


Figure B-4
Grundfos Temperature Test - 08/11/94
2 Impeller Test

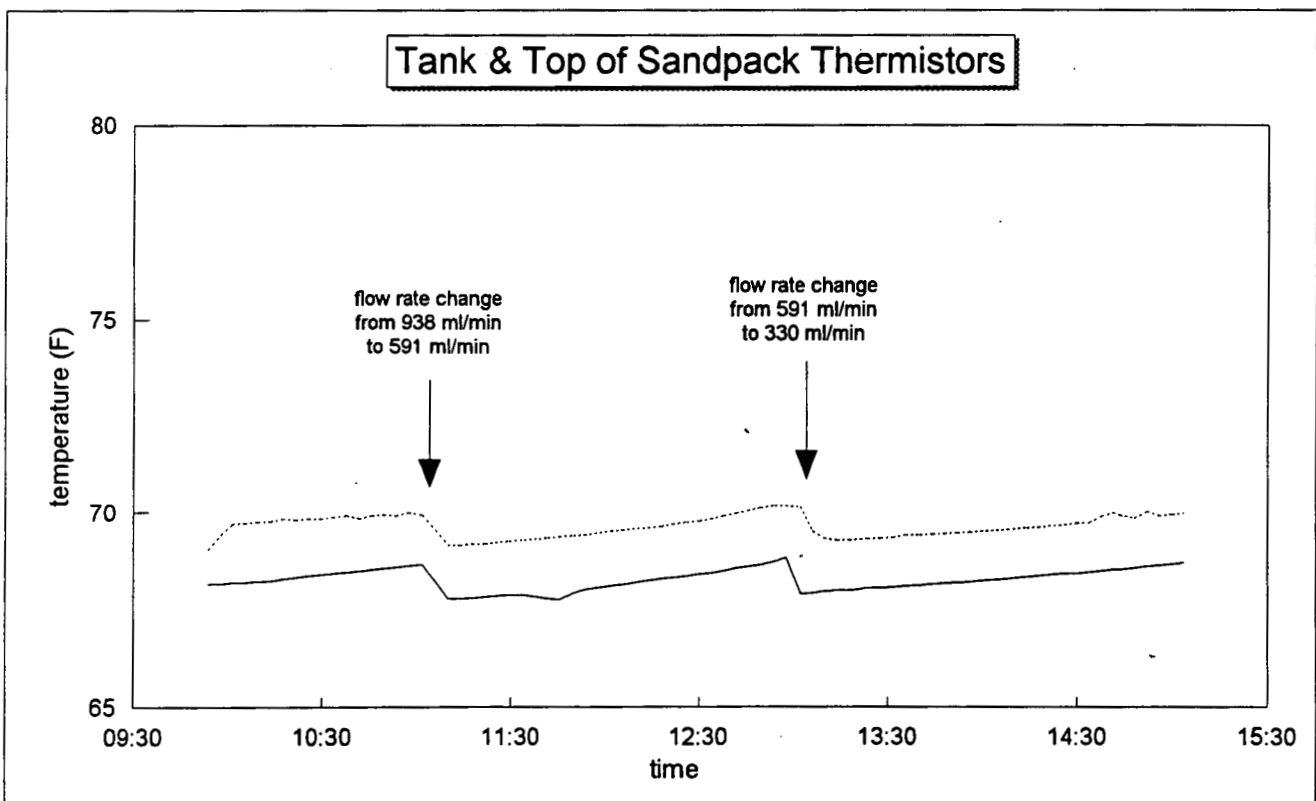
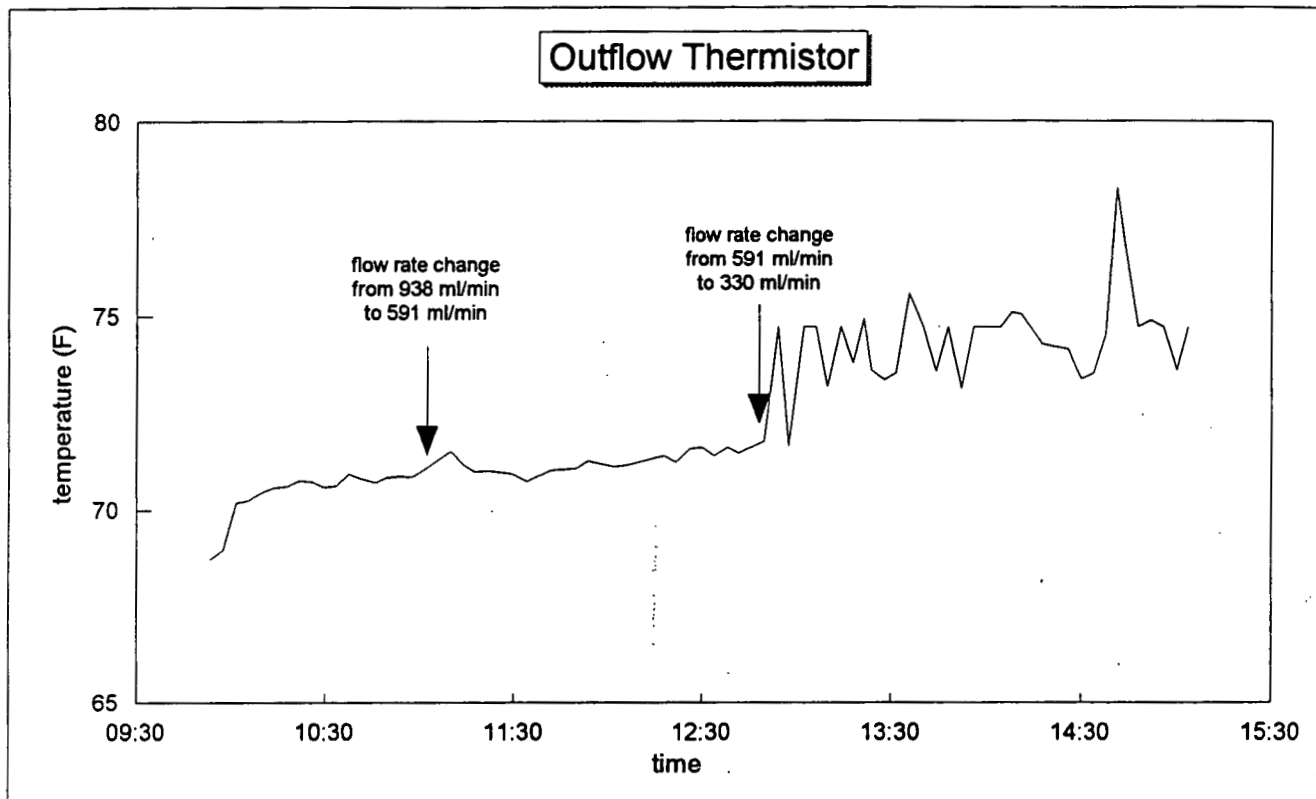


Figure B-5
Grundfos Temperature Test - 08/11/94
2 Impeller Test

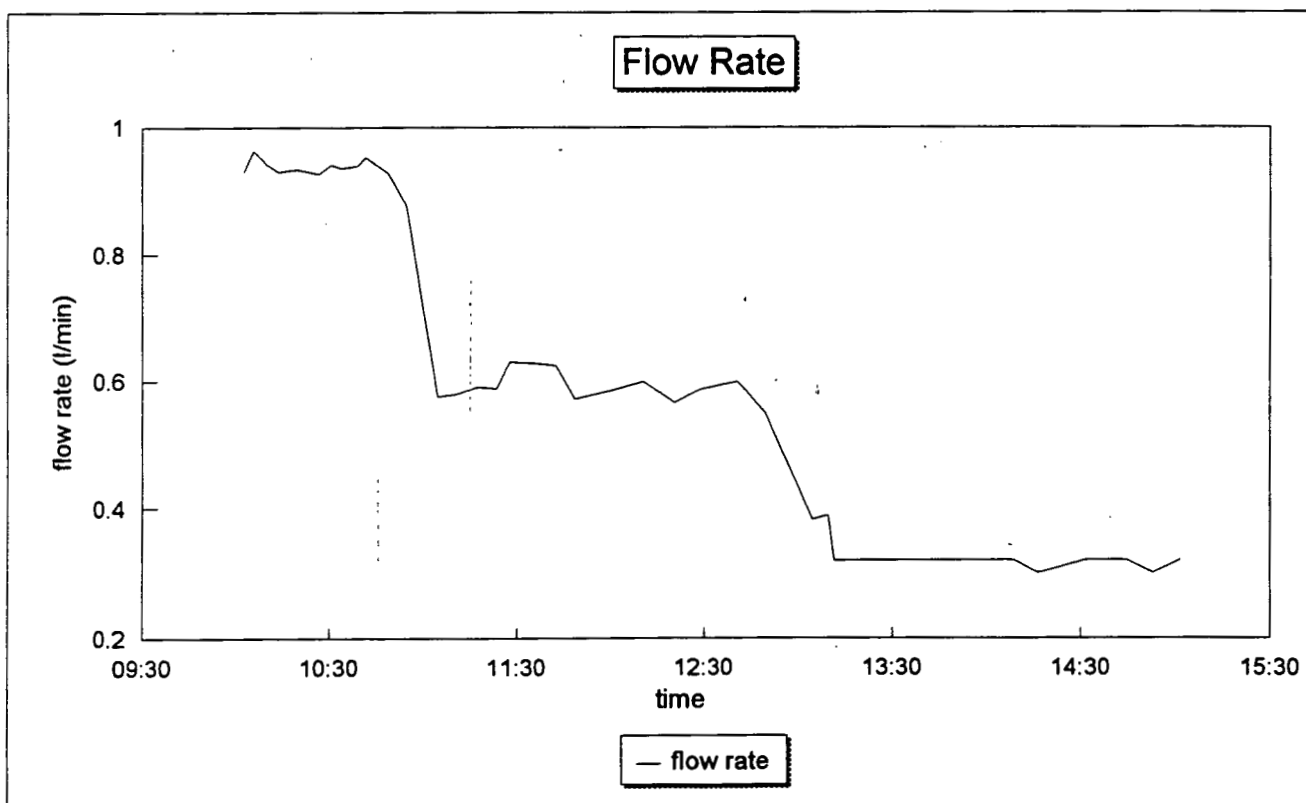
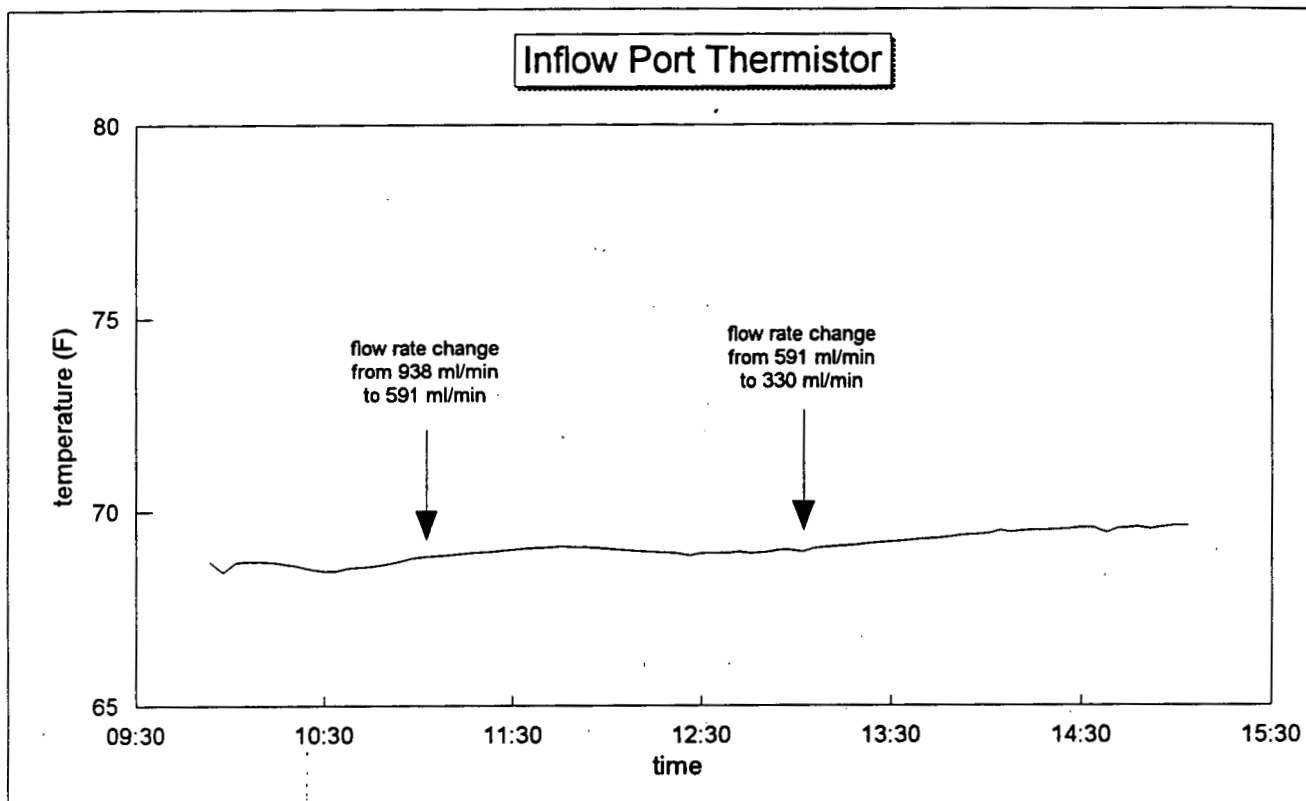
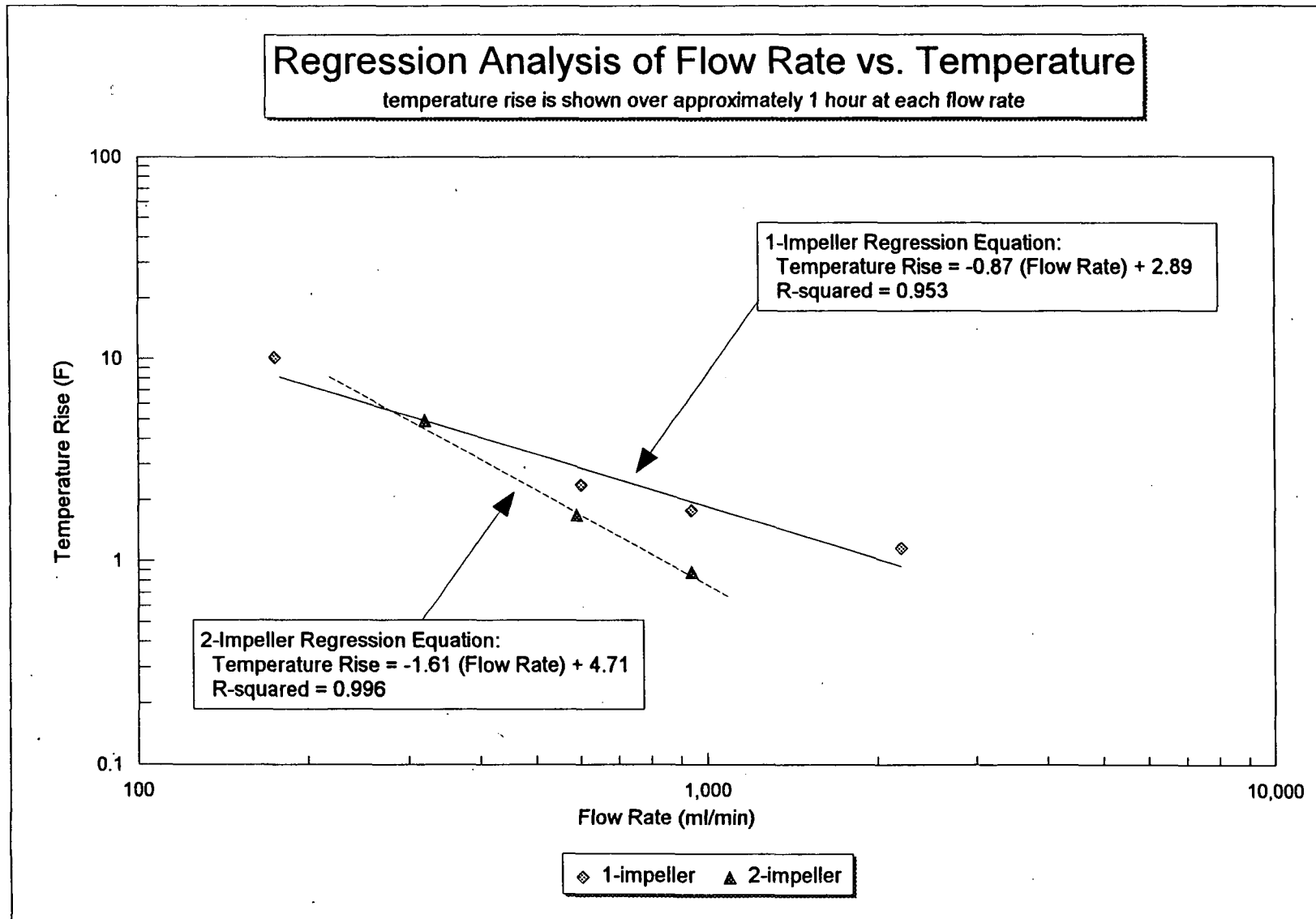


Figure B-6



LIST OF CONTENTS

FIELD EVALUATION PUMPING DATA

C-1 Tabulated Data

C-1.1 Well 0487

Isco Accuwell
Marschalk Aquarius
QED Well Wizard

C-1.2 Well 41691

Isco Accuwell
Marschalk Aquarius
Grundfos Redi-Flo 2
GeoGuard Master Flo

C-1.3 Well 1786

Isco Accuwell
Marschalk Aquarius
Grundfos Redi-Flo 2
QED Well Wizard

C-1.4 Well 2587

Isco Accuwell
Marschalk Aquarius
Grundfos Redi-Flo 2
GeoGuard Master Flo

C-1.5 Well 20591

Isco Accuwell
Marschalk Aquarius
Grundfos Redi-Flo 2
QED Well Wizard
GeoGuard Master Flo

C-2 Graphed Data

C-2.1 Well 0487

C-2.1.1 Head Depression vs Flow Rate

LIST OF CONTENTS--Continued

C-2.2 Well 41691

C-2.2.1 Head Depression vs Flow Rate

C-2.2.2 Field Parameter Data

Isco Accuwell / Hydrolab H-20 test

Marschalk Aquarius / Solomat 803 PS test

Grundfos Rediflo 2 / Orion / Geotech Flowcell test

GeoGuard Mater Flo / QED Purge-Saver test

Bailer / Hach DREL2000 / Horiba U-10 test

C-2.2.3 Flow vs Turbidity

C-2.3 Well 1786

C-2.3.1 Head Depression vs Flow Rate

C-2.3.2 Field Parameter Data

Isco Accuwell / Hydrolab H-20 test

Marschalk Aquarius / Solomat 803 PS test

Grundfos Rediflo 2 / Orion / Geotech Flowcell test

QED Well Wizard / QED Purge-Saver test

Bailer / Hach DREL2000 / Horiba U-10 test

C-2.3.3 Flow vs Turbidity

C-2.4 Well 2587

C-2.4.1 Head Depression vs Flow Rate

C-2.4.2 Field Parameter Data

Isco Accuwell / Hydrolab H-20 test

Marschalk Aquarius / Solomat 803 PS test

Grundfos Rediflo 2 / Orion / Geotech Flowcell test

GeoGuard Mater Flo / QED Purge-Saver test

Bailer / Hach DREL2000 / Horiba U-10 test

C-2.4.3 Flow vs Turbidity

LIST OF CONTENTS-Continued

C-2.5 Well 20591

C-2.5.1 Head Depression vs Flow Rate

C-2.5.2 Field Parameter Data

Isco Accuwell / Hydrolab H-20 test

Marschalk Aquarius / Solomat 803 PS test

Grundfos Rediflo 2 / Orion / Geotech Flowcell test

QED Well Wizard/QED Purge-Saver Test

GeoGuard Mater Flo / QED Purge-Saver test

Bailer / Hach DREL2000 / Horiba U-10 test

C-2.5.3 Flow vs Turbidity

KEY TO TEST CODES		
Purge/Sample System	Instrumentation	Test Code*
Isco Accuwell	Hydrolab H20	A
Marschalk Aquarius	Solomat 803P5	B
Grundfos Rediflo 2	Orion/GeoTech Flow Cell	C
QED Well Wizard	QED Purge-Saver	D
Geoguard Master Flo	QED Purge-Saver	E
Bailer	Hach DREL2000/Horiba U-10	F
* Test codes shown on tables and plots.		

Golder Associates Inc
Groundwater Field Evaluation (1994 WER
933-27157

Pump Intake Depth: 18.00 ft

[illegible]

C 0001

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
833-27157

Pump Intake Depth: 18.00 ft.

C 0002

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Pump Intake Depth: 18 ft.

[illegible]

C 0003

Isco Accuwell Low Flow Pump Test

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
833-27157

Well # 41691

Date: 07/06/94 Test # A

Field Crew: M. Capecelatro, B. Swigle, K. Jackson, B. Harder, L. Bissett

WLM: 8.97 Date: 07/06/94

Bottom of Screen: 19.35 ft.

Pump Intake Depth: 14.00 ft.

[illegible]

C 0004

Marschalk Aquarius

Low Flow Pump Test

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Well # 41691

Date: 07/02/94

Test # B

Field Crew: B. Swigle, K. Bayer, K. Jackson, L. Bissett, B. Harder

WLM: 7.78

Date: 06/30/94
Used w/Hermit kit #1

Bottom of Screen: 19.35 ft.

Total vol. purged & sampled = 15.75

Pump Intake Depth: 13.3 ft.

Purged vol. 4.41 casing vol.

CONTROLLER SETTINGS								
Date	Time	Elapsed Time	Flow Rate (ml/min)	Head Depression (ft.)	T1 Pump Vent	T2 Vac Vent	Pressure/ Vacuum	Comments
07/02/94	10:20	00:00	NA	NA	NA	NA	NA	Start Pump
07/02/94	10:23	00:03	NA	0.0	1.5/2	NA	30	↑
07/02/94	10:27	00:07	NA	0.0	4/2	NA	30	
07/02/94	10:30	00:10	NA	0.0	6/6	NA	30	Had Air & Water Hoses Reversed
								↓
07/02/94	10:52	00:00	NA	0.13	1/1	NA	25	Start Pump
07/02/94	10:53	00:01	NA	0.11	1/1	NA	25	
07/02/94	10:54	00:02	632	0.1	1/1	NA	25	
07/02/94	10:56	00:04	632	0.09	4/4	NA	25	
07/02/94	10:56	00:04	353	0.08	4/4	NA	25	
07/02/94	10:57	00:05	188	0.08	4/4	NA	25	
07/02/94	10:59	00:07	125	0.07	8/8	NA	26	
07/02/94	11:02	00:10	465	0.08	1/1	NA	30	
07/02/94	11:05	00:13	429	0.08	1/1	NA	30	
07/02/94	11:06	00:14	450	0.1	1/1	NA	35	
07/02/94	11:07	00:15	150	0.07	4/4	NA	37	
07/02/94	11:09	00:17	400	0.1	1/1	NA	48	
07/02/94	11:12	00:20	335	0.07	1/2	NA	48	
07/02/94	11:14	00:22	350	0.07	1/1	NA	25	
07/02/94	11:17	00:25	350	0.09	1/1	NA	60	
07/02/94	11:18	00:26	140	0.06	4/4	NA	60	
07/02/94	11:21	00:29	150	0.06	4/2	NA	60	
07/02/94	11:22	00:30	130	0.05	4/1	NA	60	
07/02/94	11:24	00:32	280	0.06	1/1	NA	60	
07/02/94	11:27	00:35	280	0.07	1/1	NA	25	
07/02/94	11:35	00:43	280	0.06	1/1	NA	40	
07/02/94	11:38	00:46	270	0.06	1/1	NA	40	
07/02/94	11:41	00:49	1500	0.77	1/2	1/1	40/8	Started P/V/V pump
07/02/94	11:43	00:51	1300	0.23	1/4	2/2	40/15	
07/02/94	11:46	00:54	1200	0.27	1/4	2/2	40/15	
07/02/94	11:49	00:57	1200	0.22	1/4	2/2	40/-15	
07/02/94	11:55	01:03	1200	0.22	1/4	2/2	40/-15	Start Sampling
07/02/94	12:35	01:43	1260	0.23	1/4	2/2	40/-15	End Sampling
07/02/94	12:36	01:44	640	0.23	1/10	5/5	40/-15	
07/02/94	12:38	01:46	385	0.39	10/10	5/5	40/-15	
07/02/94	12:43	01:51	60	0.1	10/10	NA	42	Switched Pump to P/V
07/02/94	12:44	01:52	395	0.1	1/1	NA	42	
07/02/94	12:51	01:59	NA	NA	NA	NA	NA	WL is 10.88' above the transducer

C 0005

Low Flow Pump Test

Well # 41691

Date: 07/03/94

Test #: C

Field Crew: M. Capecelatro, D. Fortner, L. Bissett

WLM: 8.51 @ 09:00 / 8.54 @ 10:50

Date: 07/03/94

Bottom of Screen: 19.35 ft.

Pump Intake Depth: 13.3 ft.

Hermit started at 09:18

C 0006

GeoGuard Master Flo

Low Flow Pump Test

Golder Associates Inc.

833-2715

Well # 41691

Date: 07/09/94

Test # E _____

Field Crew: B. Harder, D. Kauffman, L. Bissett, H. Sanchez

WLM:

Date/Time: _____

Bottom of Screen: 19.35 ft.

Pump Intake Depth: 14 ft.

[illegible]

C 0007

WATER QUALITY FIELD PARAMETER MEASUREMENTS

C 0007A

Well Number: 41691

Test # F

Golden Associates Inc.

Groundwater Field Evaluation (1994 WER)

933-27157

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

Users: M. Capecelatro, K. Jackson

Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)

Other

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Other:

Adjust:

Date/Time:

Pump on Date/Time 07/12/94 13:14

Sample Collection Start - Date/Time 07/12/94 13:40

Pump off Date/Time 07/12/94 14:00

Sample Collection Stop - Date/Time 07/12/94 14:00

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 210 Turb. (NTU)	Horiba Turb. (NTU)	Water Description
07/12/94	13:14	Initial	14.3	13.9	6.86	9.21	730.00	655.000	2.49	13	6.04	12	clear
07/12/94	13:20	0.8	12.2	12.3	7.08	9.15	780.00	668.000	3.07		79.5	108	cloudy
07/12/94	13:25	1.6	12.4	12.5	6.96	9.09	770.00	672.000	3.22	82	107	210	cloudy
07/12/94	13:29	2.3	12.6	12.0	7.05	9.02	770.00	674.000	2.98		124	237	cloudy
07/12/94	13:32	3.1	12.4	11.7	6.84	8.94	780.00	681.000	3.67	165	176	319	cloudy
07/12/94	13:36	3.9	12.3	11.6	6.87	8.85	800.00	683.000	4.71		227	603	cloudy
07/12/94	13:40	4.7	12.6	11.6	6.92	8.82	760.00	681.000	5.03	93	257	364	cloudy

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
833-27157

Pump Intake Depth: 11.50 ft.

[illegible]

C 0008

Low Flow Pump Test

Golder Associates Inc.

Groundwater Field Evaluation (1994 WER)

833-27157

Date: 07/08/94

Test # 8

Field Crew: M. Capecelatro, B. Swigle, B. Harder, K. Jackson, L. Bissett, A. Dump

WLM: 7.06

Date/Time: 07/08/94 09:20

Bottom of Screen: 15.67 ft.

Pump Intake Depth: 12.00 ft.

SETTINGS

[illegible]

C 0009

Low Flow Pump Test

Golder Associates Inc.

Groundwater Field Evaluation (1994 WER)

933-27157

Date: 07/07/94

Test #: C

Field Crew: B. Harder, K. Jackson

WLM: Date/Time: 07/07/94

Bottom of Screen: 15.67 ft.

Pump Intake Depth: 12.00 ft

[illegible]

C 0010

QED Well Wizard

Low Flow Pump Test

Golder Associates Inc.

833-27157

Well # 1786

Date: 07/05/94

Test # D

Field Crew: M. Capecelatro, K. Jackson, A. Dump, L. Bissett

WLM: 07/12/94 15:00

Date/Time: 07/05/94

Bottom of Screen: 15.67 ft

Pump Intake Depth: 11.95 ft

[illegible]

C 0011

WATER QUALITY FIELD PARAMETER MEASUREMENTS

C 0011A

Well Number: 1786

Test # F

Golder Associates Inc.

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

Groundwater Field Evaluation (1994 WER)

933-27157

Users: M. Capecelatro, K. Jackson

Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Other: _____

Adjust: _____

Date/Time: _____

Pump on Date/Time 07/12/94 13:14

Sample Collection Start - Date/Time 07/12/94 13:40

Pump off Date/Time 07/12/94 14:00

Sample Collection Stop - Date/Time 07/12/94 14:00

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 2 Turb. (NTU)	Horiba Turb. (NTU)	Water Description
07/12/94	09:57	initial	14.6	14.7	6.82	8.45	5480	4990	3.15	85	105	205	cloudy-tan
07/12/94	10:02	0.6	14.0	13.0	6.97	8.19	5600	5030	3.43	over-mg	1000	999	cloudy-tan
07/12/94	10:08	1.2	13.7	12.6	6.90	8.04	5810	5170	4	over-mg	1000	999	cloudy-tan
07/12/94	10:11	1.8	13.6	12.7	6.95	8.06	5880	5250	3.72	over-mg	1000	999	cloudy-tan
07/12/94	10:17	2.4	13.6	12.5	6.85	8.15	5790	5170	4.91	over-mg	1000	999	cloudy-tan
07/12/94	10:21	3.0	13.6	12.1	6.91	8.16	5860	5250	3.54	over-mg	1000	999	cloudy-tan
07/12/94	10:26	3.6	13.6	12.3	6.93	7.96	5840	5190	4.45	over-mg	1000	999	cloudy-tan

Low Flow Pump Test

Groundwater Field Evaluation (1994 WER)

933-77157

Well # 2587

Date: 07/08/94

Test # A

Field Crew: B. Harder, A. Dump, K. Jackson, M. Capecelatro, L. Bissett

WLM: _____

Date: _____

Bottom of Screen: 45.5 ft.

Pump Intake Depth: 35 ft.

CONTROLLER SETTINGS

[illegible]

C 0012

Low Flow Pump Test

Well # 2587

Date: 07/06/94

Test # 8

Field Crew: M. Capecelatro, K. Jackson, B. Swigle, B. Harder, L. Bissett

WLM: 24.98

Date: 07/06/94

Bottom of Screen: 45.5 ft

Pump Intake Depth: 35 ft.

[illegible]

C 0013

Grundfos Redi-Flo 2

Low Flow Pump Test

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Well #: 2587

Date: 06-30-94

Test #: C

Field Crew: M. Capecelatro, B. Harder, B. Swigle, K. Jackson, L. Bissett

WLM: 24.53

Date: 06-29-94

Bottom of Screen: 2.05+17.5+ ft.

Pump Intake Depth: 34.96 ft.

Date	Time	Elapsed Time	Flow Rate (ml/min)	Head Depression (ft.)	Settings Frequency (HRTZ)	Comments
06/30/94	10:07	NA	NA	0.09	NA	Water Level Reading At Start
06/30/94	13:22	00:04	600	NA	NA	Pump On
06/30/94	13:23	00:05	1000	NA	112	Surging Flow
06/30/94	13:23	00:05	950	0.37	112	
06/30/94	13:25	00:07	950	0.38	112	
06/30/94	13:27	00:09	857	0.38	112	Steady-smooth Clear Flow
06/30/94	13:28	00:10	857	0.39	112	
06/30/94	13:29	00:11	1000	0.39	112	
06/30/94	13:30	00:12	1000	0.39	112	
06/30/94	13:31	00:13	857	0.39	112	
06/30/94	13:32	00:14	923	0.38	112	
06/30/94	13:34	00:16	857	0.38	112	
06/30/94	13:36	00:18	857	0.38	112	
06/30/94	13:37	00:19	923	0.38	112	
06/30/94	13:38	00:20	857	0.39	112	
06/30/94	13:40	00:22	800	0.39	112	
06/30/94	13:41	00:23	857	0.38	112	
06/30/94	13:43	00:25	857	0.38	112	
06/30/94	13:47	00:29	857	0.38	112	
06/30/94	13:49	00:31	857	0.37	112	
06/30/94	13:54	00:36	800	0.39	112	Start Sampling
06/30/94	13:56	00:38	NA	0.39	112	
06/30/94	13:58	00:40	NA	0.38	112	
06/30/94	14:00	00:42	NA	0.38	112	
06/30/94	14:04	00:46	NA	0.37	112	
06/30/94	14:10	00:52	NA	0.37	112	
06/30/94	14:16	00:58	NA	0.36	112	
06/30/94	14:30	01:12	NA	0.37	112	Stop Sampling
TOTAL PUMPED: Sample + 11.35 gal.						

C 0014

Low Flow Pump Test

Goldar Associates Inc

Groundwater Field Evaluation (1994 WER

933-2715

Date: 07/11/94

Test # E

Field Crew: B. Harder, B. Swigle, K. Jackson, M. Capecelatro

WLM:

Date: _____

Bottom of Screen: 45.5 ft.

Pump Intake Depth: 35 ft.

CONTROLLER SETTINGS

[illegible]

C 0015

WATER QUALITY FIELD PARAMETER MEASUREMENTS

C 0015 A

Well Number: 2587

Test # F

Golder Associates Inc.

Groundwater Field Evaluation (1994 WER)

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

933-27157

Users: M. Capecelatro, K. Jackson

Active Probes: Temp pH Sp. Con DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/12/94 08:30

Other: _____

Adjust: _____

Date/Time: _____

Pump on Date/Time 07/12/94 15:03

Sample Collection Start - Date/Time 07/12/94 15:31

Pump off Date/Time 07/12/94 16:00

Sample Collection Stop - Date/Time 07/12/94 16:00

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 2 Turb. (NTU)	Horiba Turb. (NTU)	Water Description
07/12/94	15:03	initial	16.9	14.8	7.56	9.51	760.00	663.000	7.99	20	8.93	19	clear
07/12/94	15:10	1.6	13.7	13.0	7.80	9.29	810.00	725.000	13.13		752	58	cloudy-tan
07/12/94	15:14	3.3	12.5	13.3	7.51	9.19	830.00	780.000	7.62	over-mg	1000	999	cloudy-tan
07/12/94	15:18	4.9	13.0	12.5	7.44	9.11	830.00	749.000	7.39				cloudy-tan
07/12/94	15:22	6.5	13.0	12.7	7.45	8.83	840.00	764.000	11.4	over-mg	1000	999	cloudy-tan
07/12/94	15:26	8.2	13.1	12.3	7.33	9.11	840.00	757.000	12.54		868	59	cloudy-tan
07/12/94	15:31	9.8	12.9	12.5	7.39	8.85	840.00	757.000	12.78	over-mg	1000	42	cloudy-tan

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Pump Intake Depth: 21.50 ft

[illegible]

Low Flow Pump Test

Golder Associates Inc.

Groundwater Field Evaluation (1994 WER)

933-27157

Pump Intake Depth: 21.50 ft

CONTROLLER

[illegible]

C 0017

Low Flow Pump Test

933-27157

Well #: 20591

Date: 07/11/94

Test #: C

Field Crew: B. Swigle, B. Harder, M. Capecelatro, K. Jackson, L. Bissett

WLM: 19.0-approximately

Date: 07/10/94

Bottom of Screen: 24.10 ft.

Pump Intake Depth: 21.50 ft.

[illegible]

C 0018

QED Well Wizard Low Flow Pump Test

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
933-27157

Well # 20591

Date: 07/07/94

Test # D

Field Crew: B. Swigle, B. Harder, M. Capecelatro, K. Jackson, L. Bissett

WLM: 18.99

Date/Time: 07/06/94

Bottom of Screen: 24.10 ft.

Pump Intake Depth: 21.50 ft.

CONTROLLER SETTINGS

Date	Time	Elapsed Time	Flow Rate (ml/min)	Head Depression (ft.)	Discharge Timer	Refill Timer	Pressure Gauge	Comments
07/07/94	09:47	00:00	NA	NA	NA	NA	NA	Start Time
07/07/94	09:53	00:06	NA	0.11	4	7	17	
07/07/94	09:55	00:08	NA	0.50	3	4	14	
07/07/94	10:25	00:38	NA	NA	NA	NA	NA	Start Time
07/07/94	10:26	00:01	100	0.42	5	4	17	
07/07/94	10:30	00:05	110	0.49	5	4	18	
07/07/94	10:32	00:07	110	0.52	5	4	17	
07/07/94	10:34	00:09	95	0.54	5	4	16	
07/07/94	10:37	00:12	70	0.46	5	4	16	
07/07/94	10:41	00:16	70	0.53	5	4	16	
07/07/94	10:43	00:18	70	0.55	5	4	16	
07/07/94	10:45	00:20	80	0.53	5	4	16	
07/07/94	10:49	00:24	70	0.57	5	4	16	
07/07/94	10:52	00:27	60	0.50	5	4	16	
07/07/94	10:54	00:29	60	0.56	5	4	16	
07/07/94	10:55	00:30	90	0.51	5	4	16	
07/07/94	10:57	00:32	65	0.53	5	4	14	
07/07/94	10:59	00:34	60	0.53	5	4	14	
07/07/94	11:02	00:37	50	0.55	5	4	14	
07/07/94	11:04	00:39	35	0.46	5	4	14	
07/07/94	11:06	00:41	60	0.50	5	4	15	
07/07/94	11:11	00:46	70	0.51	5	4	15	
07/07/94	11:21	00:56	85	0.48	5	4	15	
								Sampling

Golder Associates Inc.
Groundwater Field Evaluation (1994 WER)
833-27157

Pump Intake Depth: 21.50 ft ft.

[illegible]

WATER QUALITY FIELD PARAMETER MEASUREMENTS

C 0020A

Well Number: 20591

Test # F

Golder Associates Inc.

Unit Name: Hach DREL2000/Horiba

Pump: Bailer

Groundwater Field Evaluation (1994 WER)

933-27157

Users: B. Harder, B. Swigle

Active Probes: Temp pH Sp. Co DO Turb Redox (Circle)

Other _____

CALIBRATION

pH: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

Sp. Cond: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

DO: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

Turb ORP: Check

Adjust: Auto

Date/Time: 07/13/94 08:30

Other: _____

Adjust: _____

Date/Time: _____

Pump on Date/Time 07/13/94 11:12

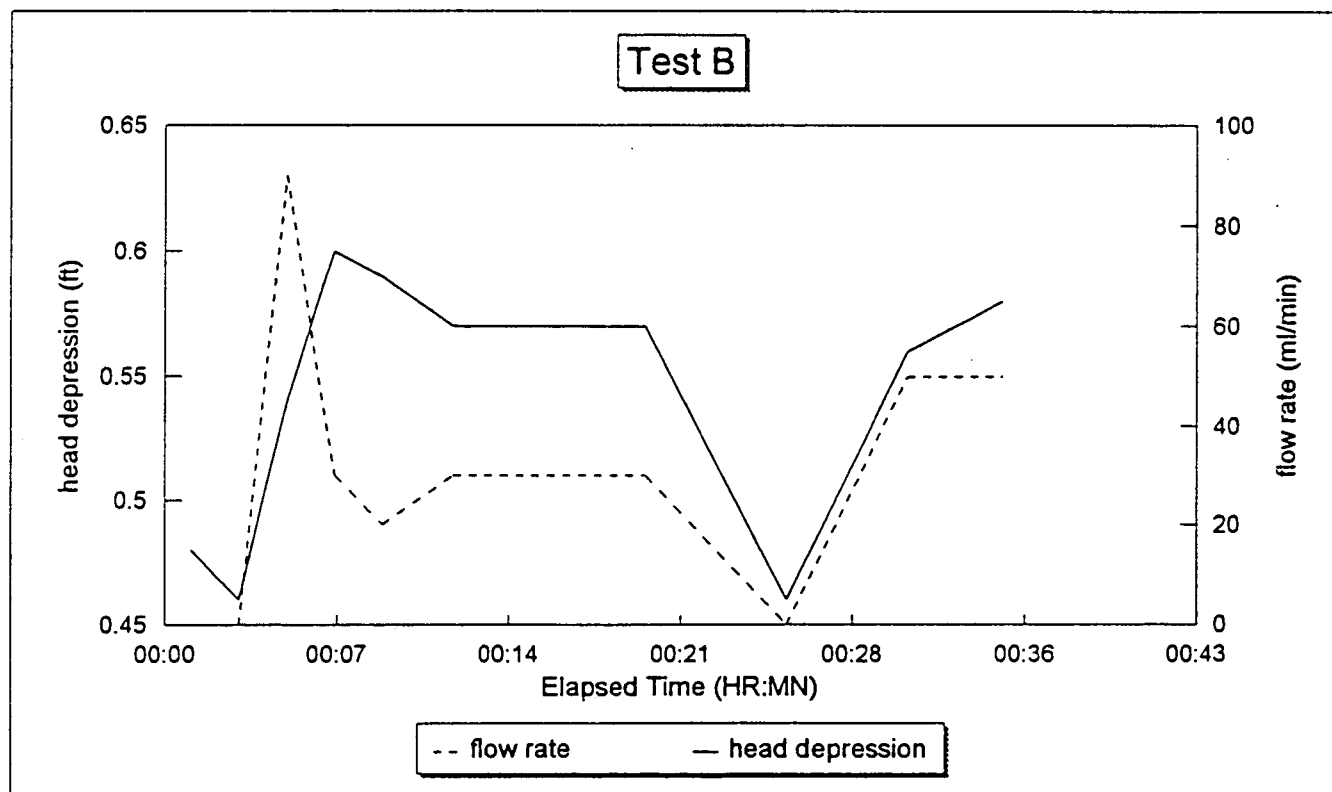
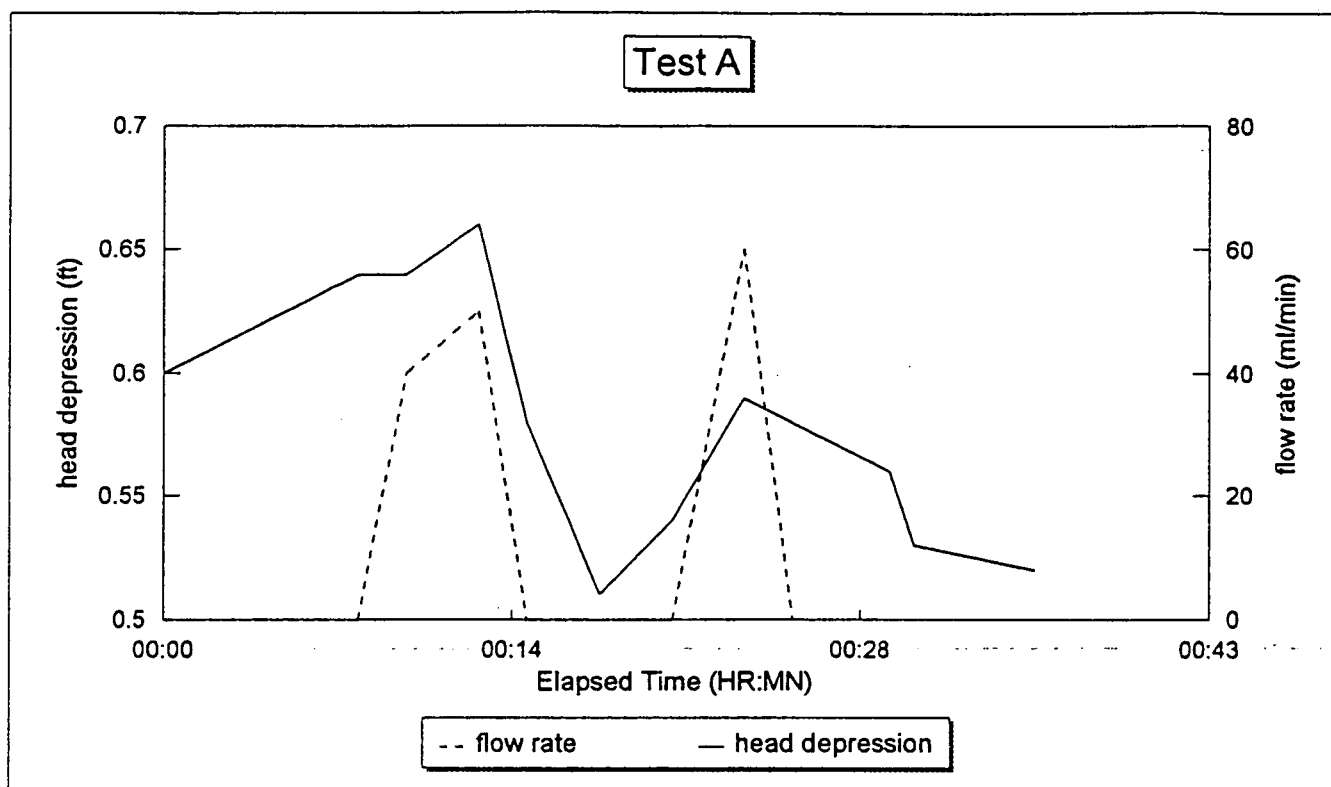
Sample Collection Start - Date/Time 07/13/94 11:47

Pump off Date/Time 07/13/94 12:30

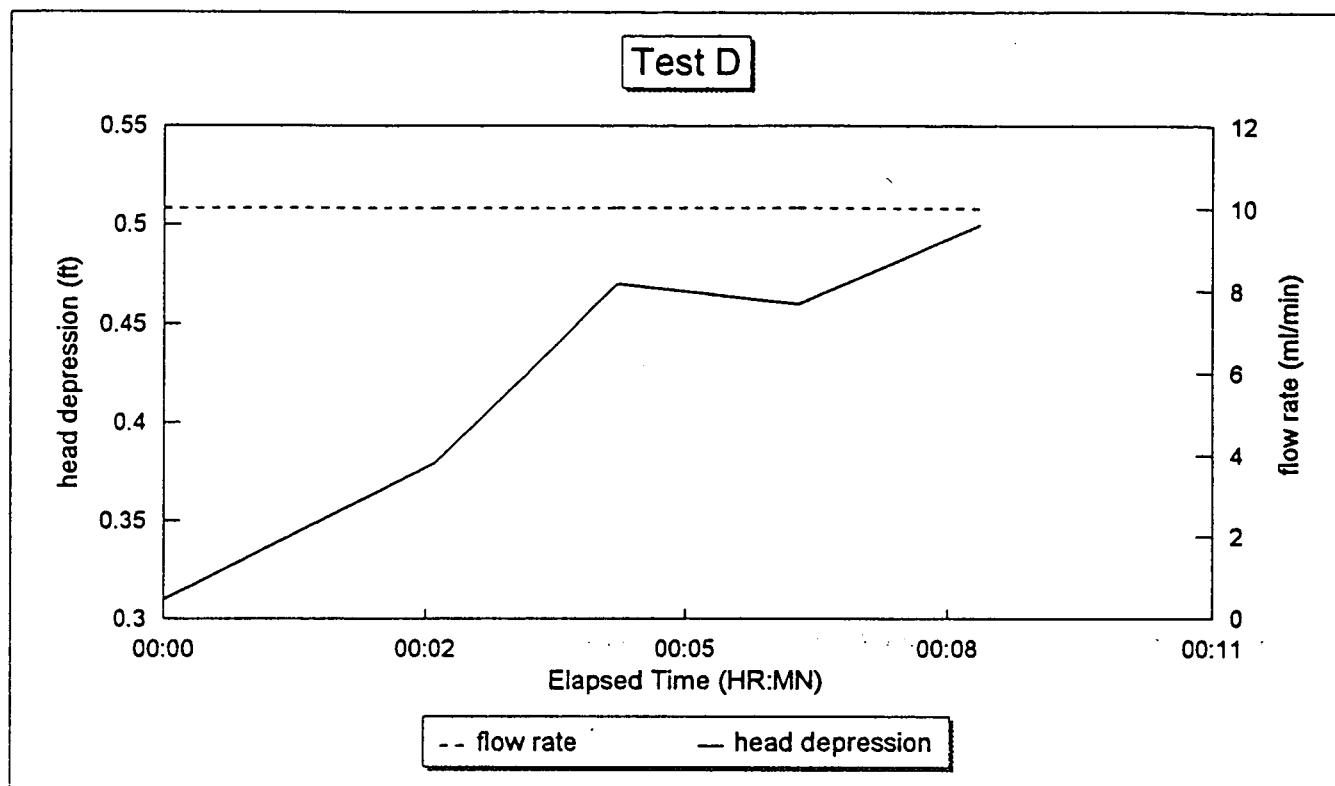
Sample Collection Stop - Date/Time 07/13/94 12:30

Date	Time	Vol. Purged (gal.)	Hach Temp (C)	Horiba Temp (C)	Hach pH	Horiba pH	Hach Sp. Cond. (uS)	Horiba Sp. Cond. (uS)	Horiba DO (mg/L)	Hach 2000 Turb. (FTU)	Hach 2100 Turb. (NTU)	Horiba Turb. (NTU)	Water Description
07/13/94	11:12	initial	13.8	13.2	7.23	7.05	770.00	684.000	12.82	17	15.6	31	clear
07/13/94	11:20	0.6	13.7	12.4	7.20	7.05	1780.00	1680.000	5.34	over-mg	973	999	brown
07/13/94	11:26	1.1	13.4	12.3	7.27	7.10	1280.00	1210.000	12.79	over-mg	over-mg	999	brown
07/13/94	11:31	1.7	13.3	12.1	7.30	7.05	970.00	920.000	12.94	over-mg	over-mg	over-mg	brown
07/13/94	11:36	2.3	13.0	12.1	7.28	7.00	960.00	780.000	7.04	over-mg	over-mg	over-mg	brown
07/13/94	11:41	2.8	12.9	12.0	7.26	6.93	800.00	736.000	12.67	over-mg	over-mg	over-mg	brown
07/13/94	11:47	3.4	12.9	11.9	7.24	6.91	870.00	884.000	6.66	over-mg	over-mg	over-mg	brown

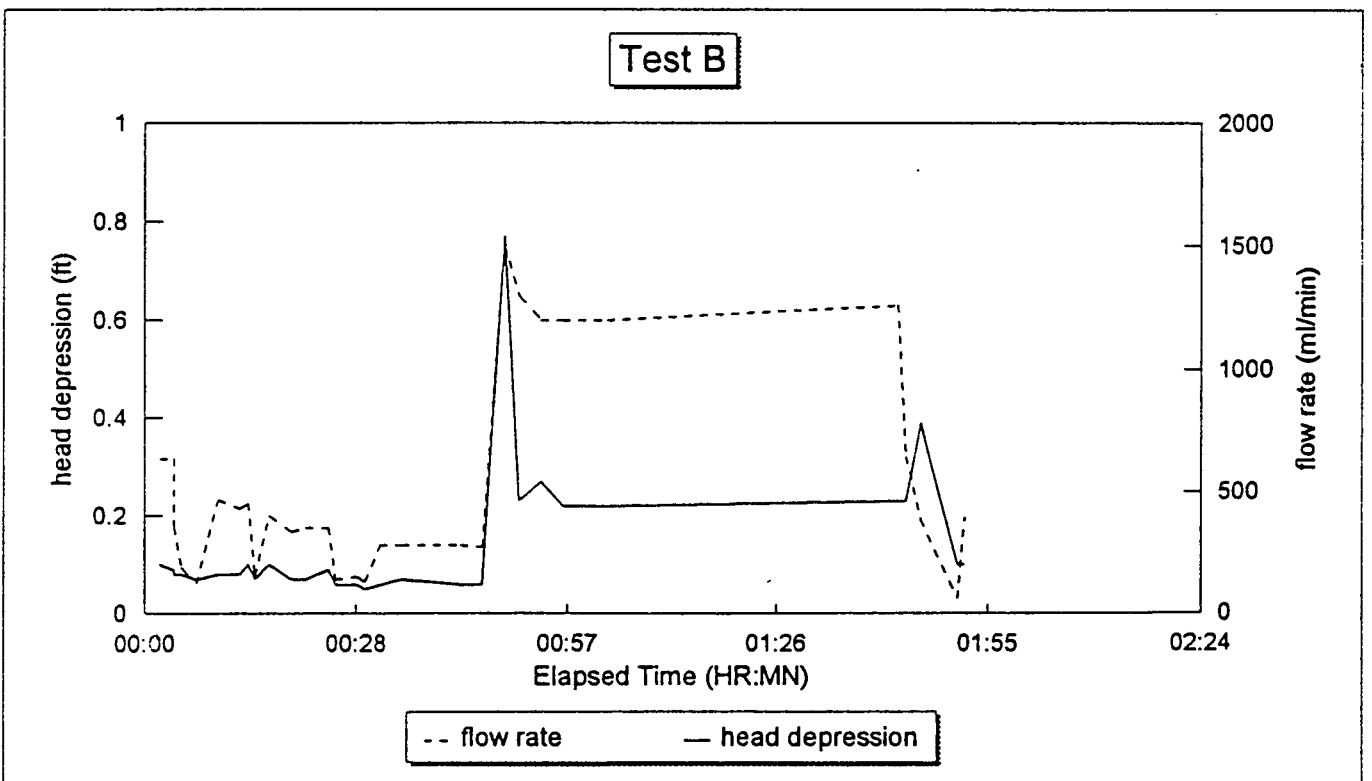
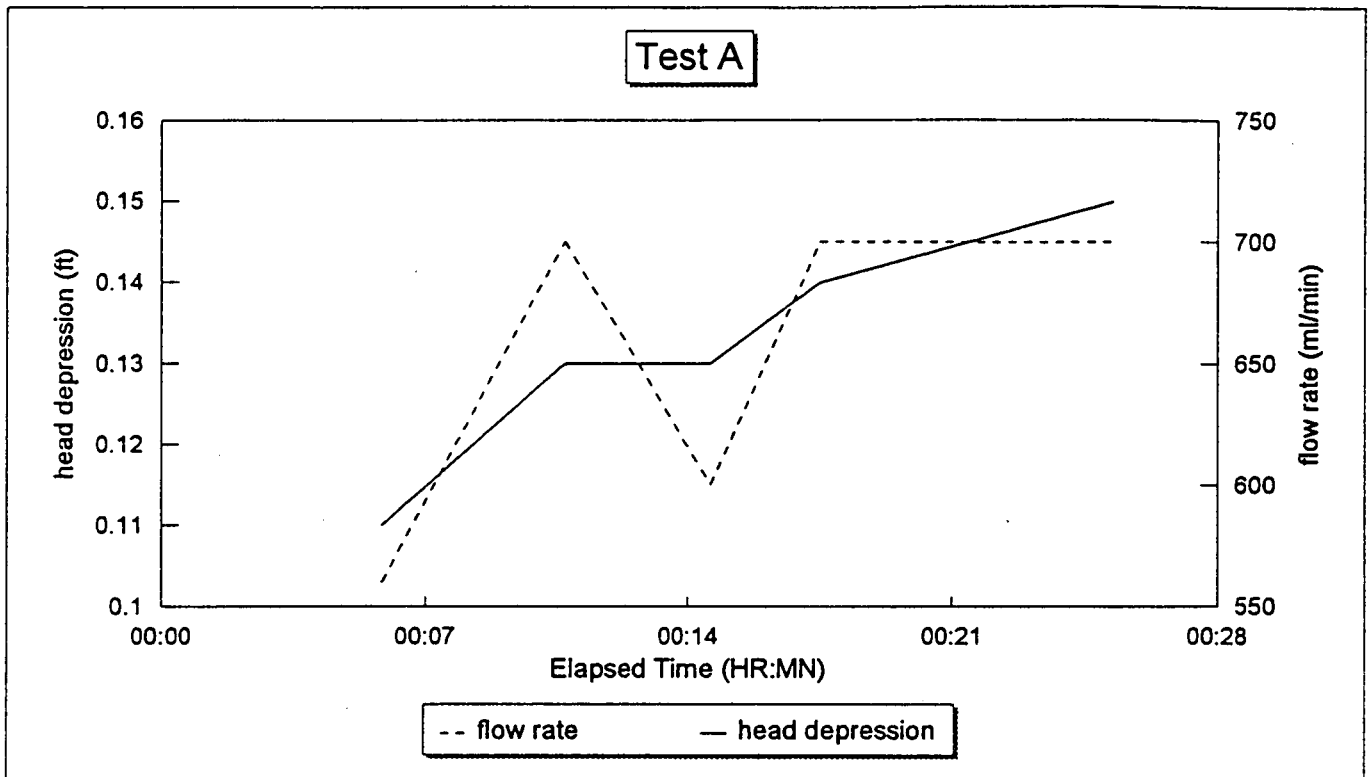
Head Depression vs Flow Rate - Well 0487



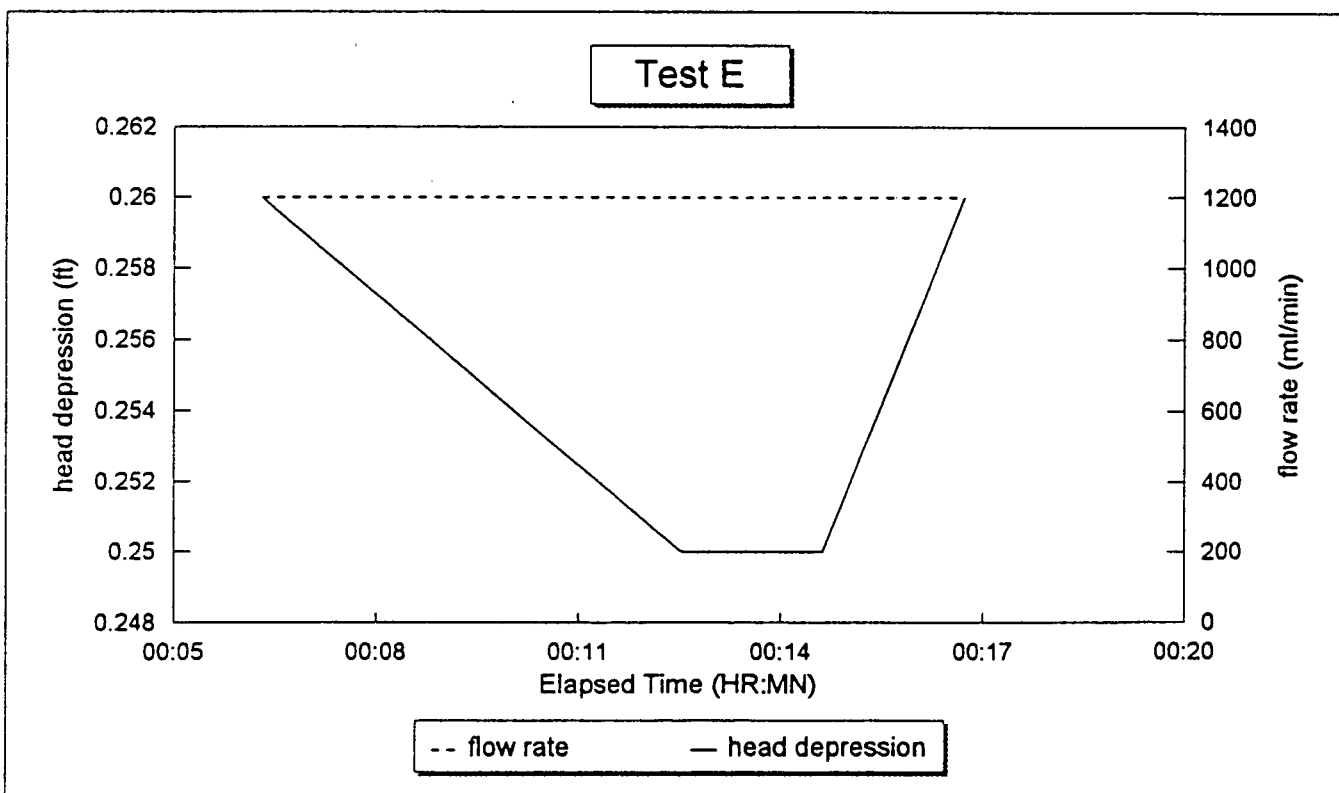
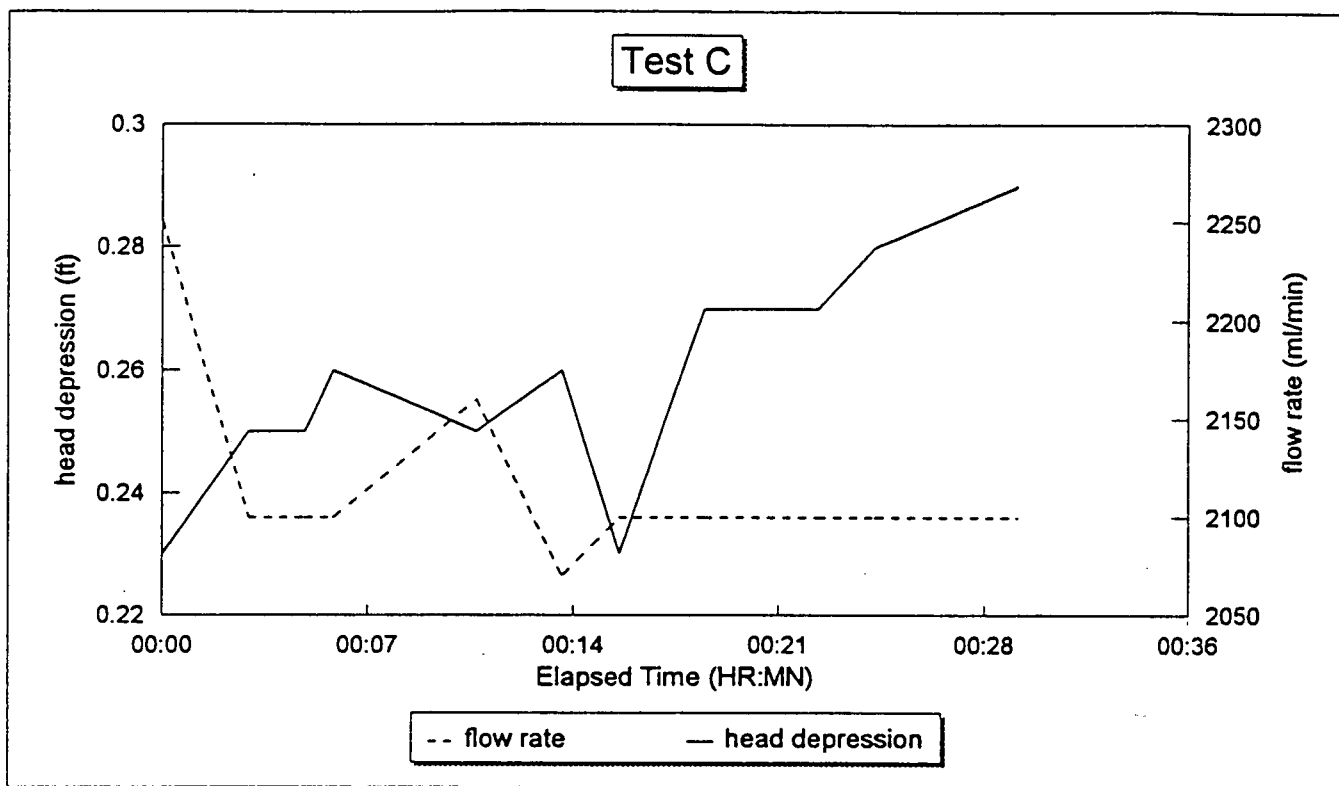
Head Depression vs Flow Rate - Well 0487



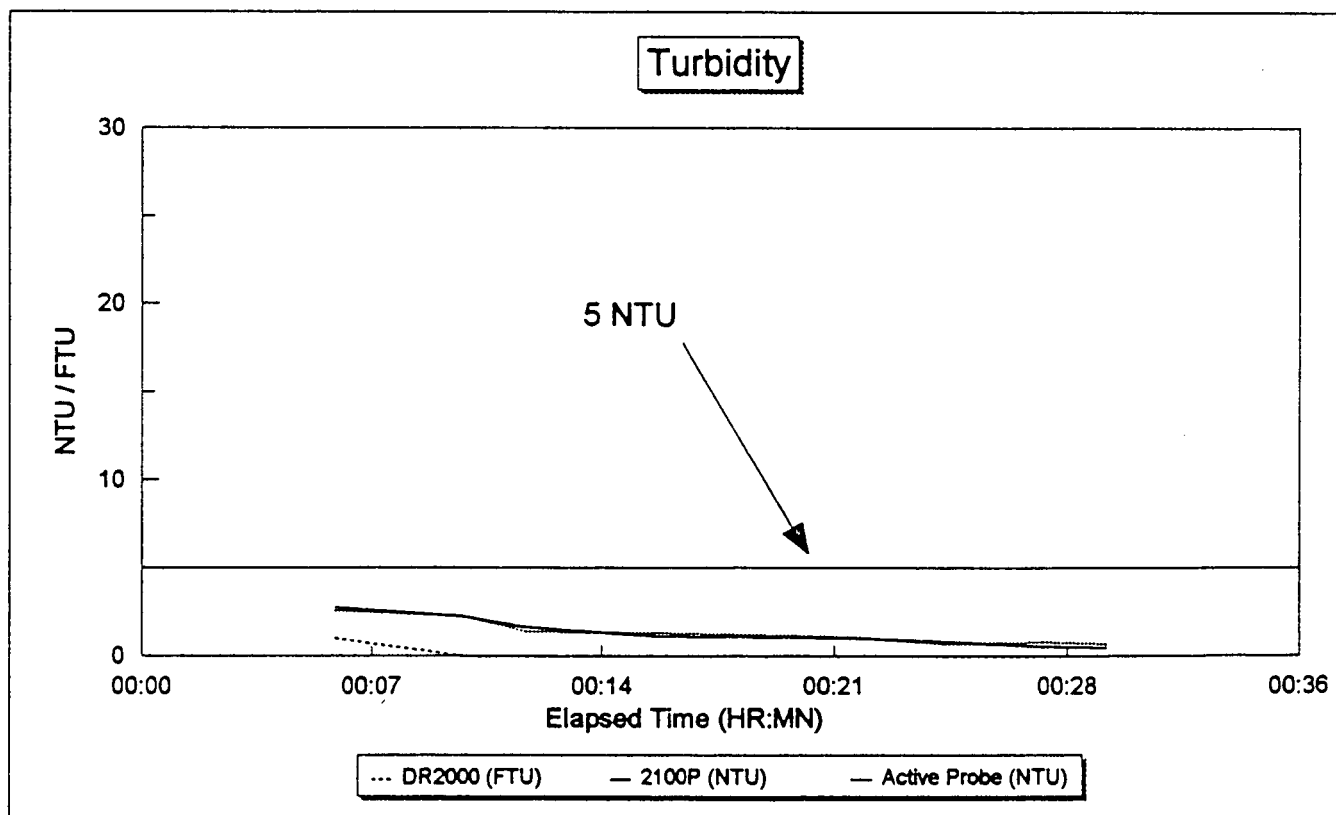
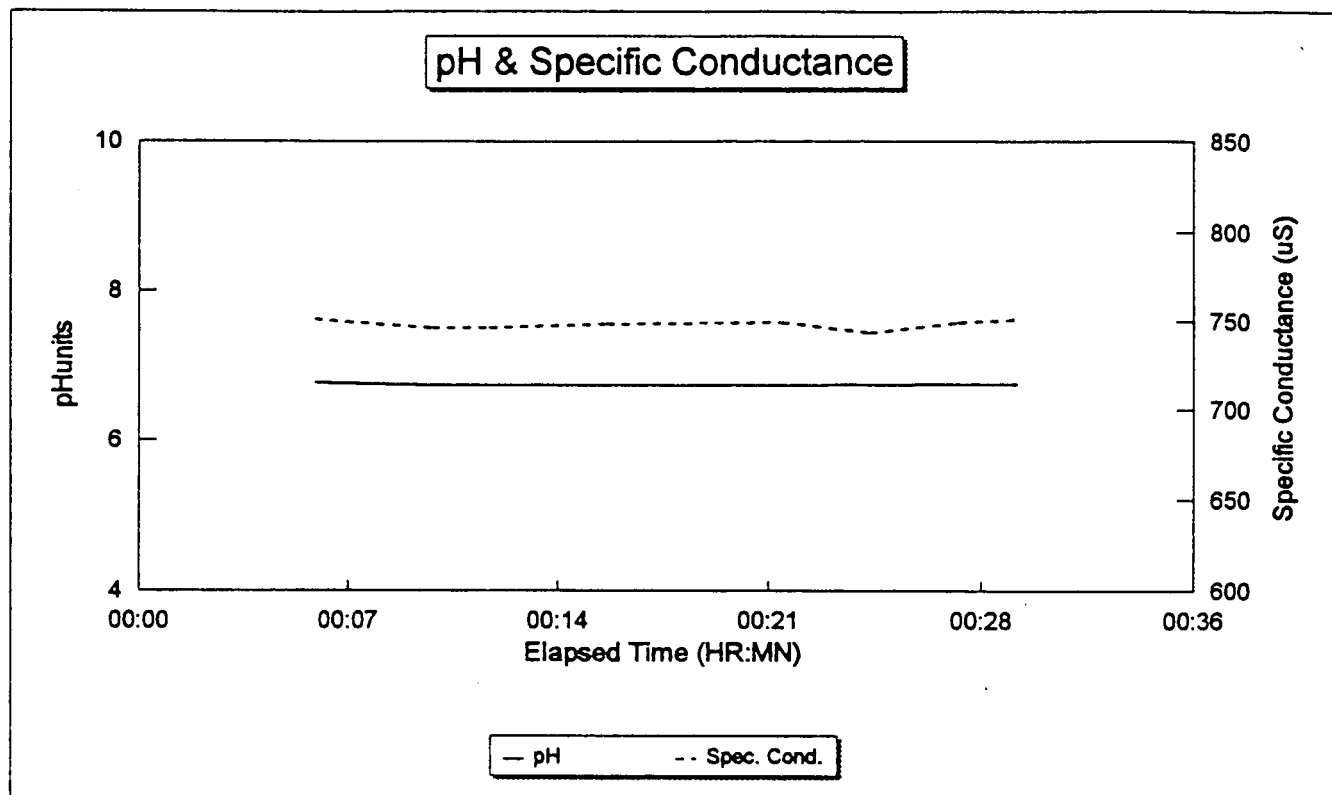
Head Depression vs Flow Rate - Well 41691



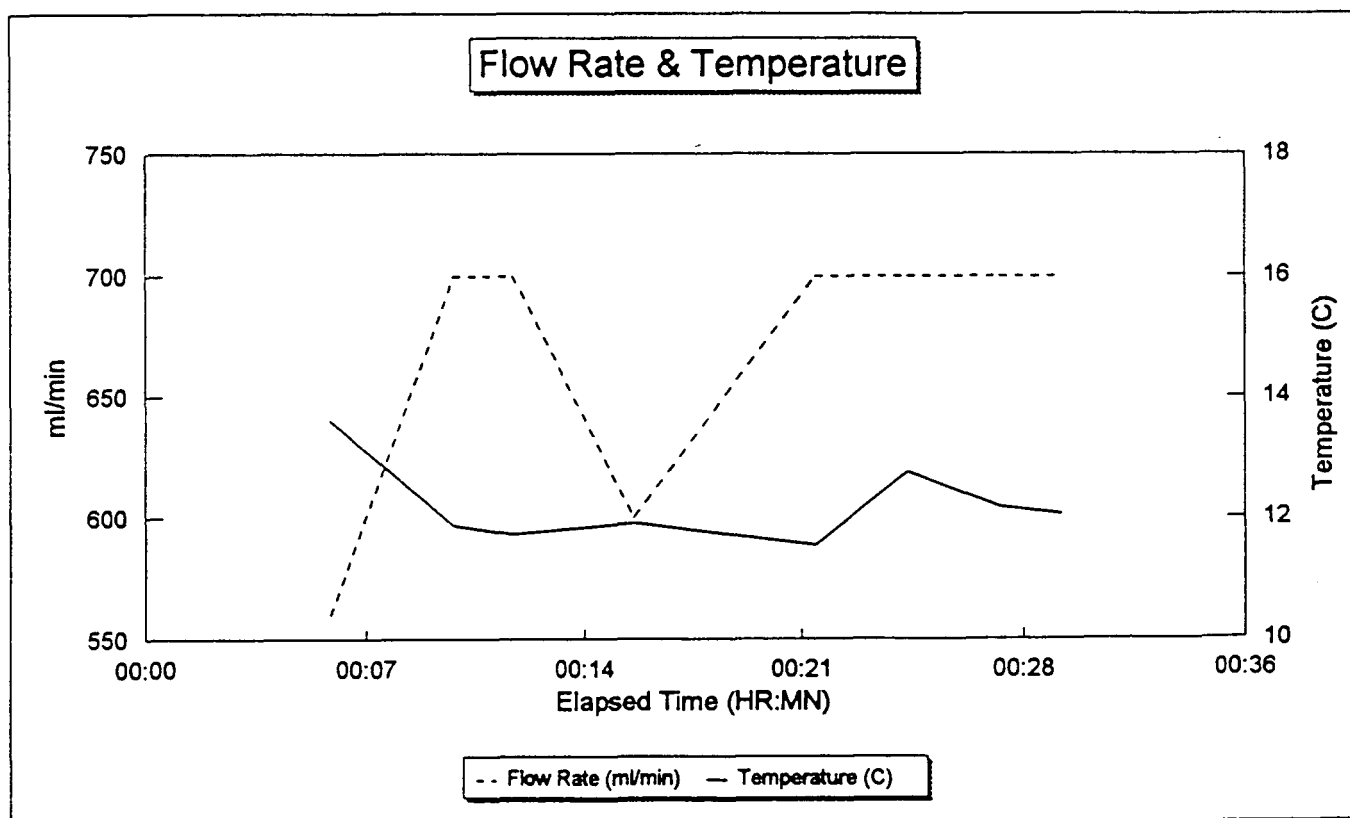
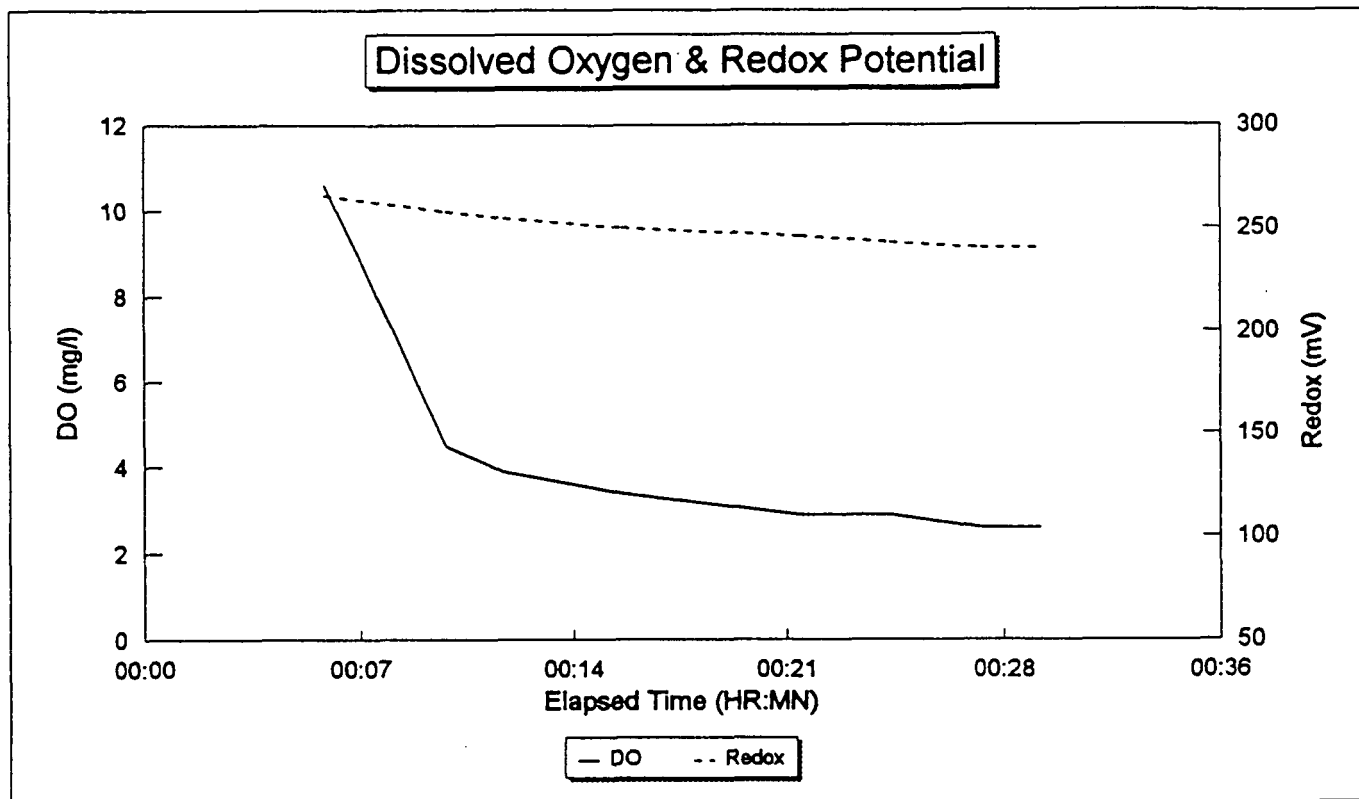
Head Depression vs Flow Rate - Well 41691



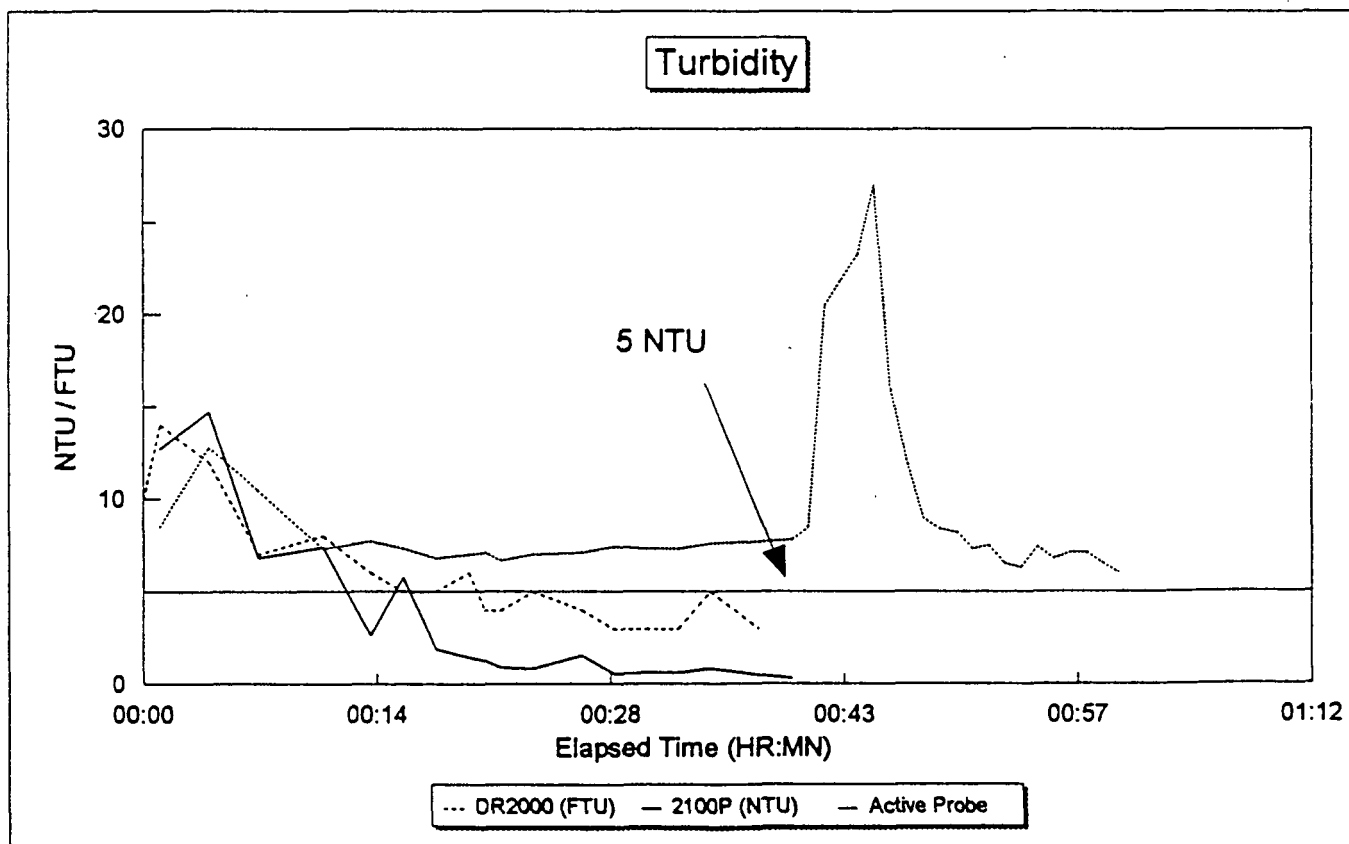
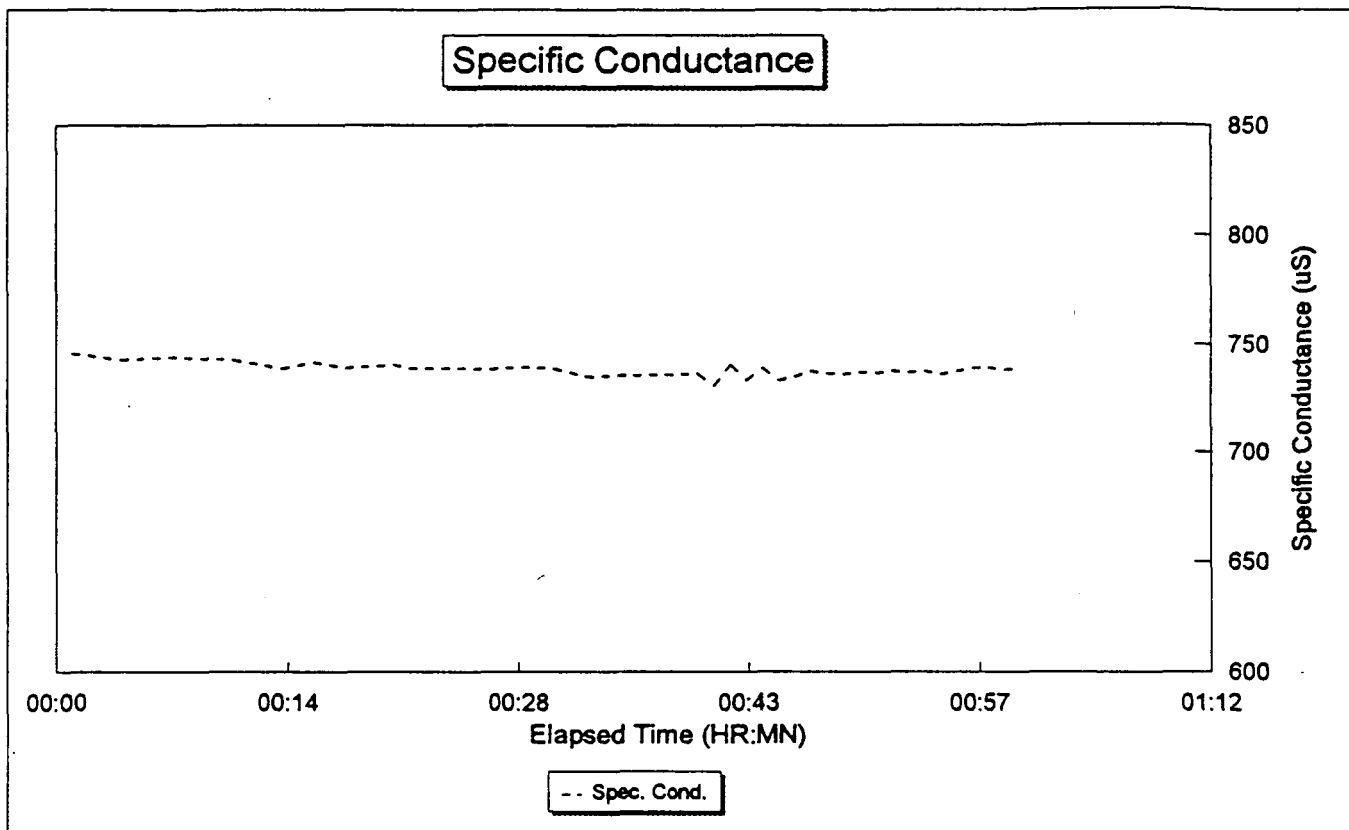
Field Parameter Data - Well 41691 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20



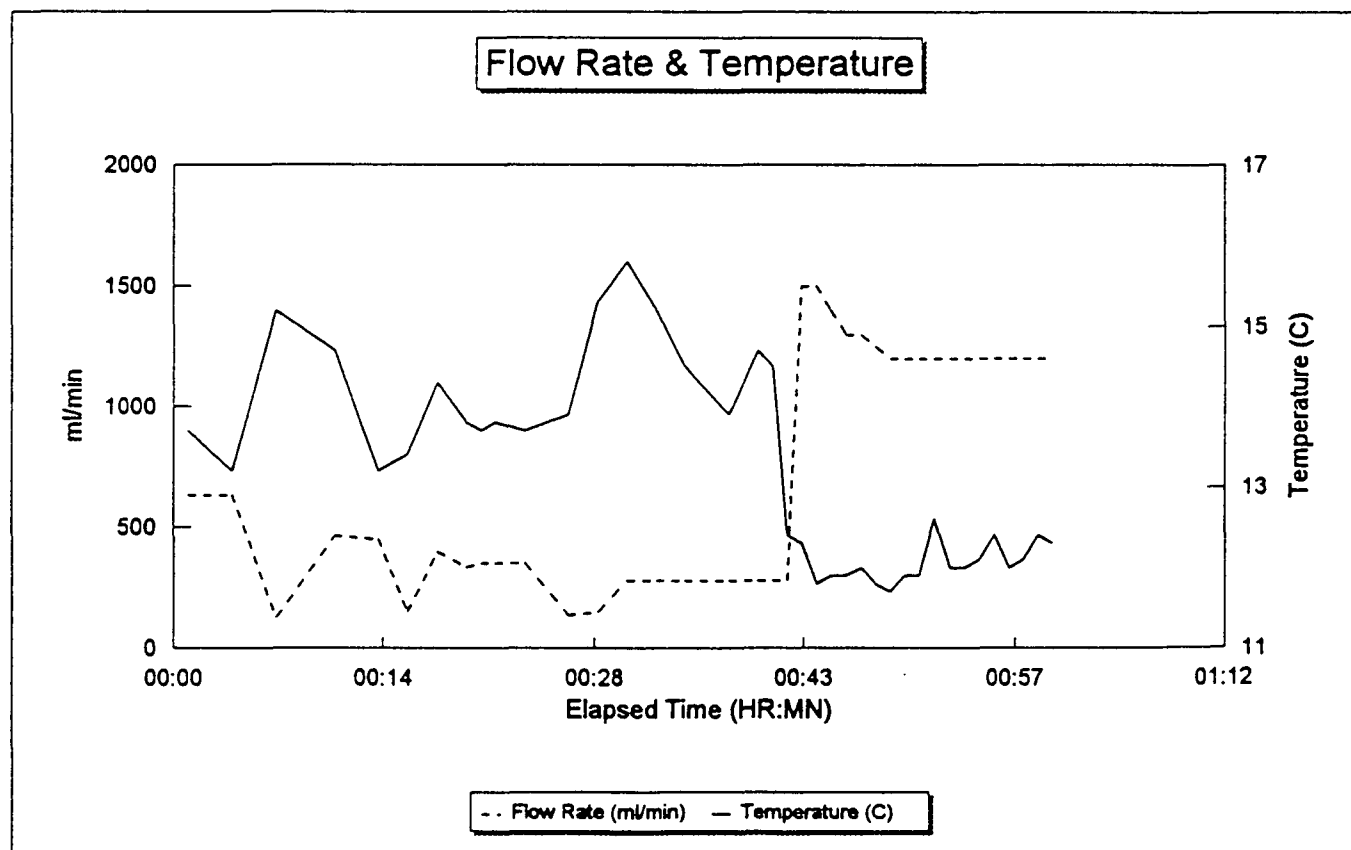
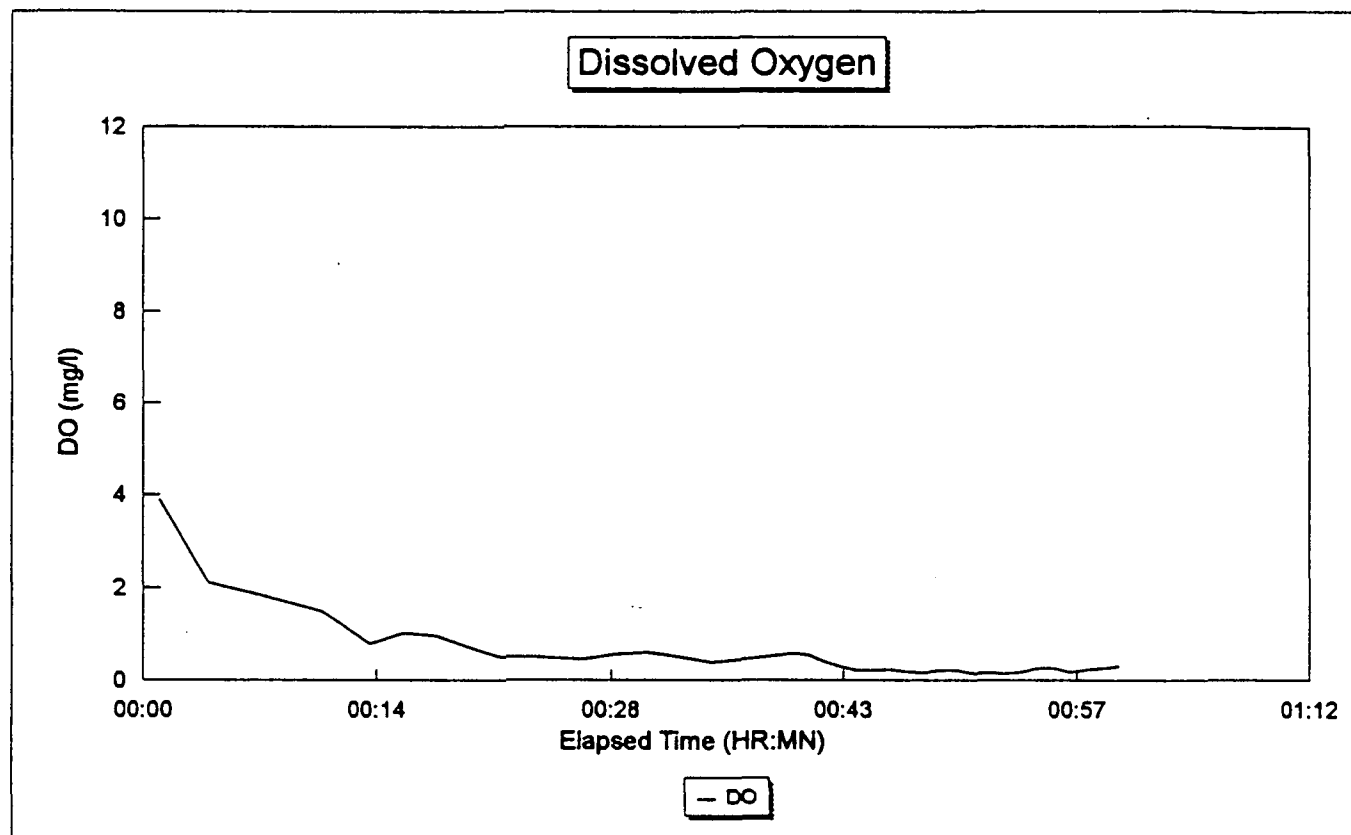
Field Parameter Data - Well 41691 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20



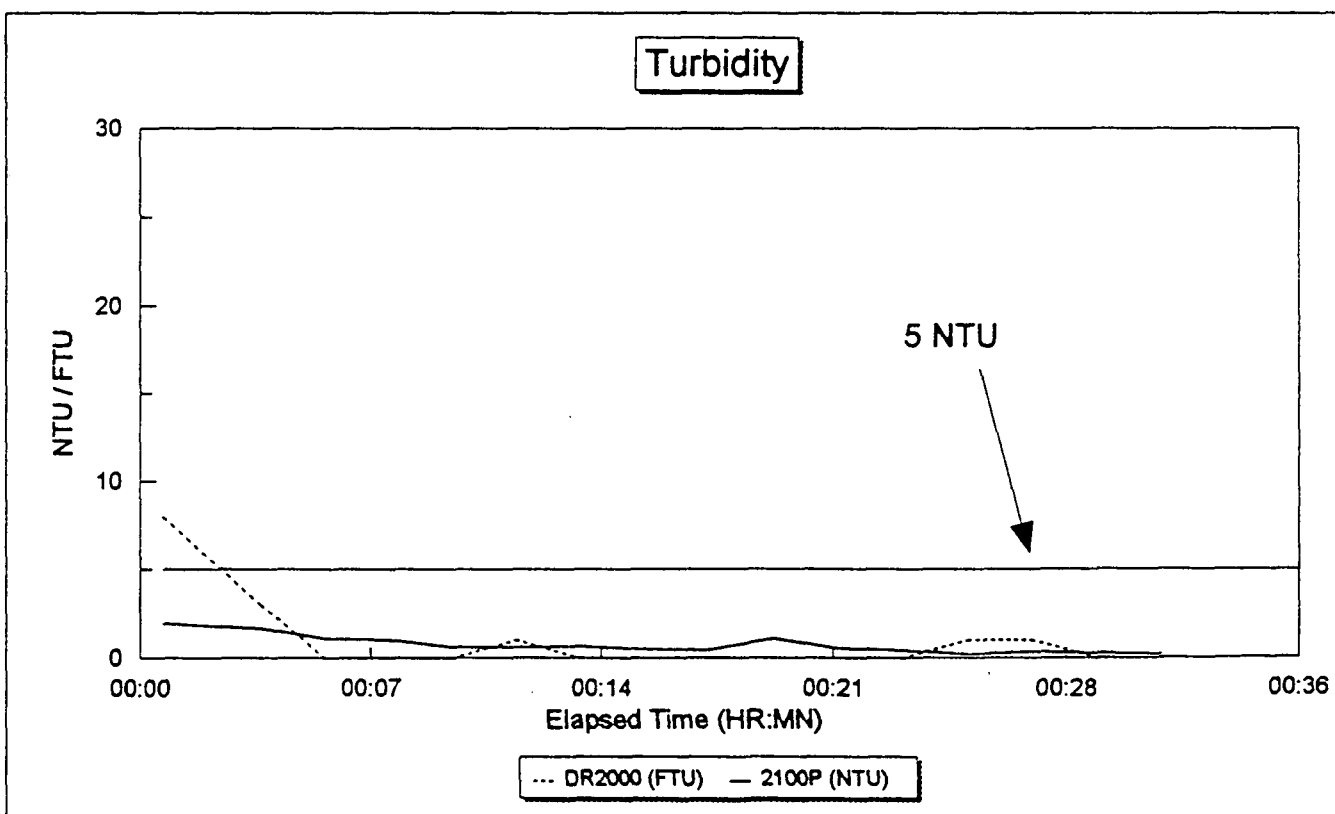
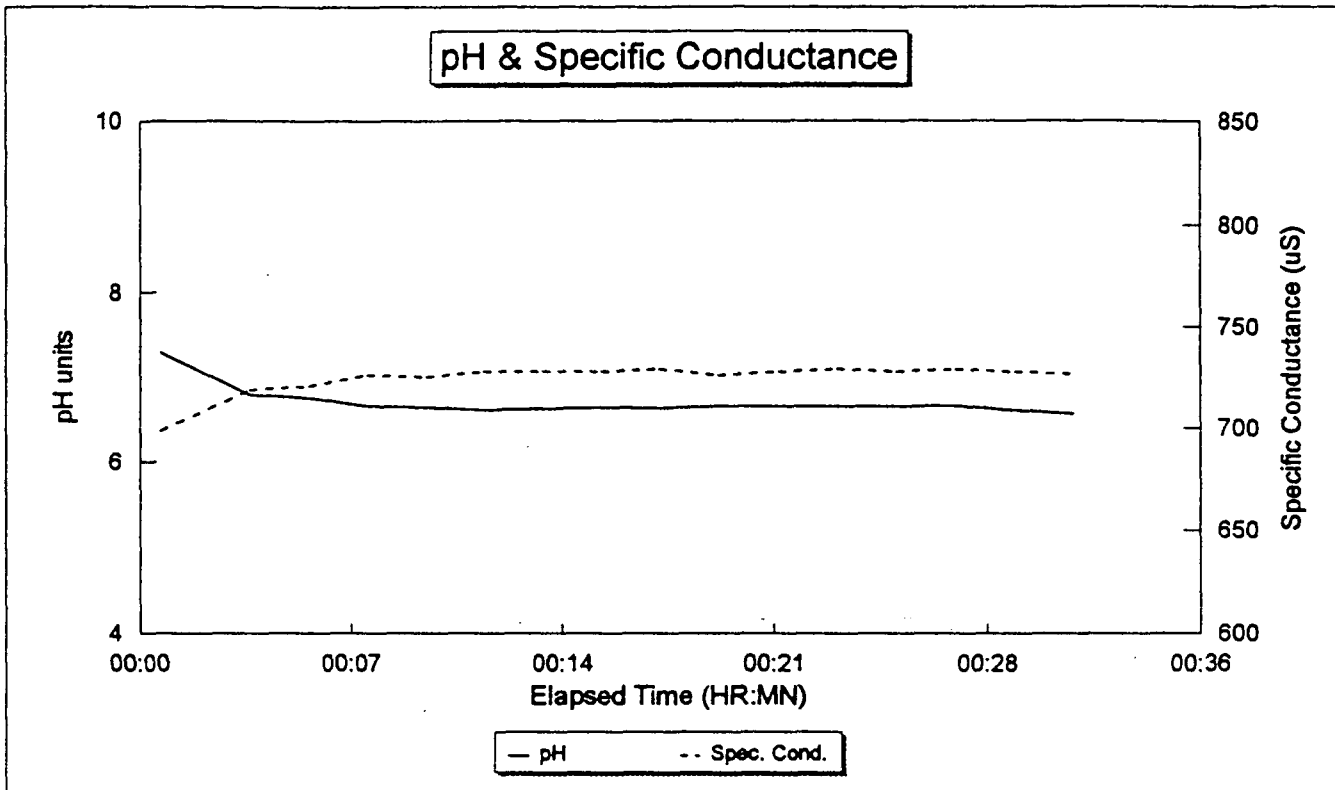
Field Parameter Data - Well 41691 - Test B
Pump: Marschalk Bladder Pump - Instrumentation: Solomat



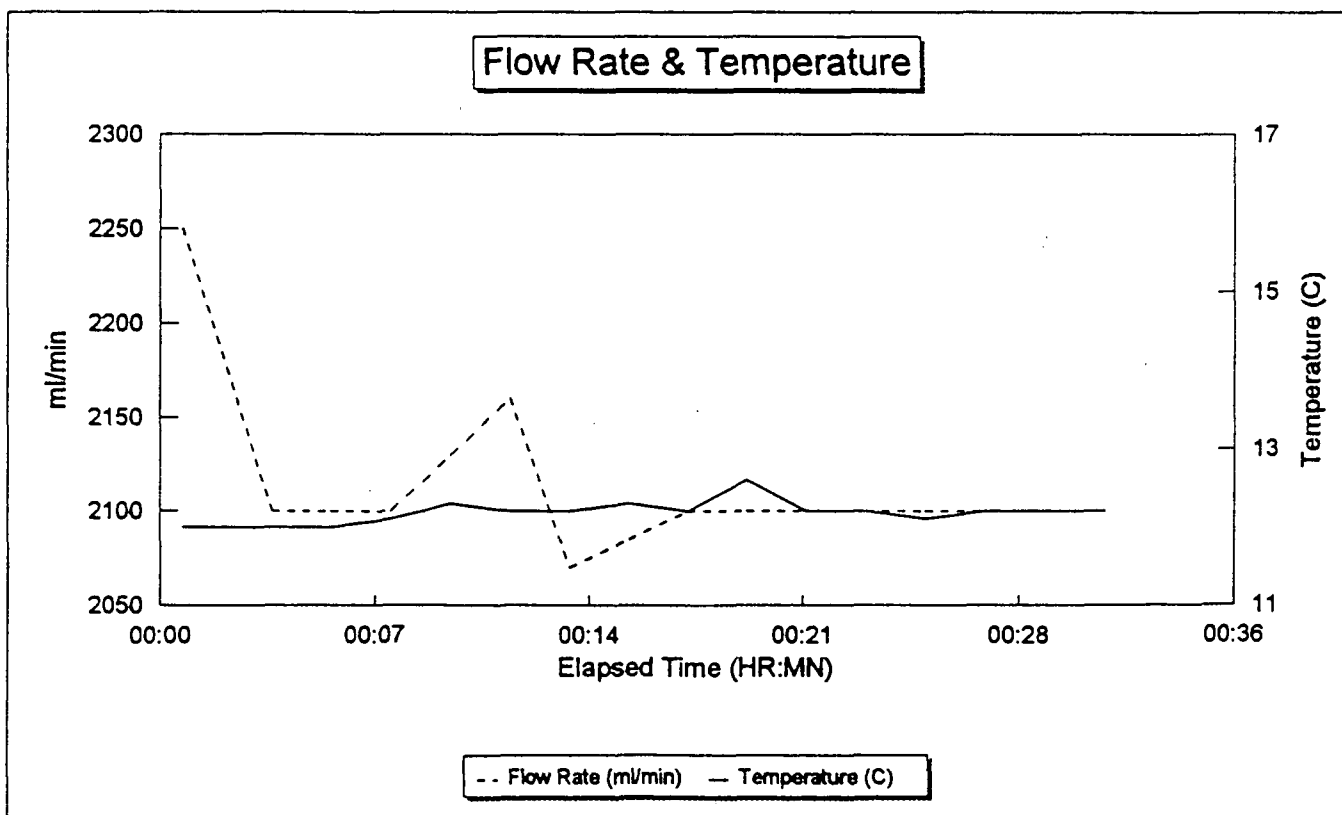
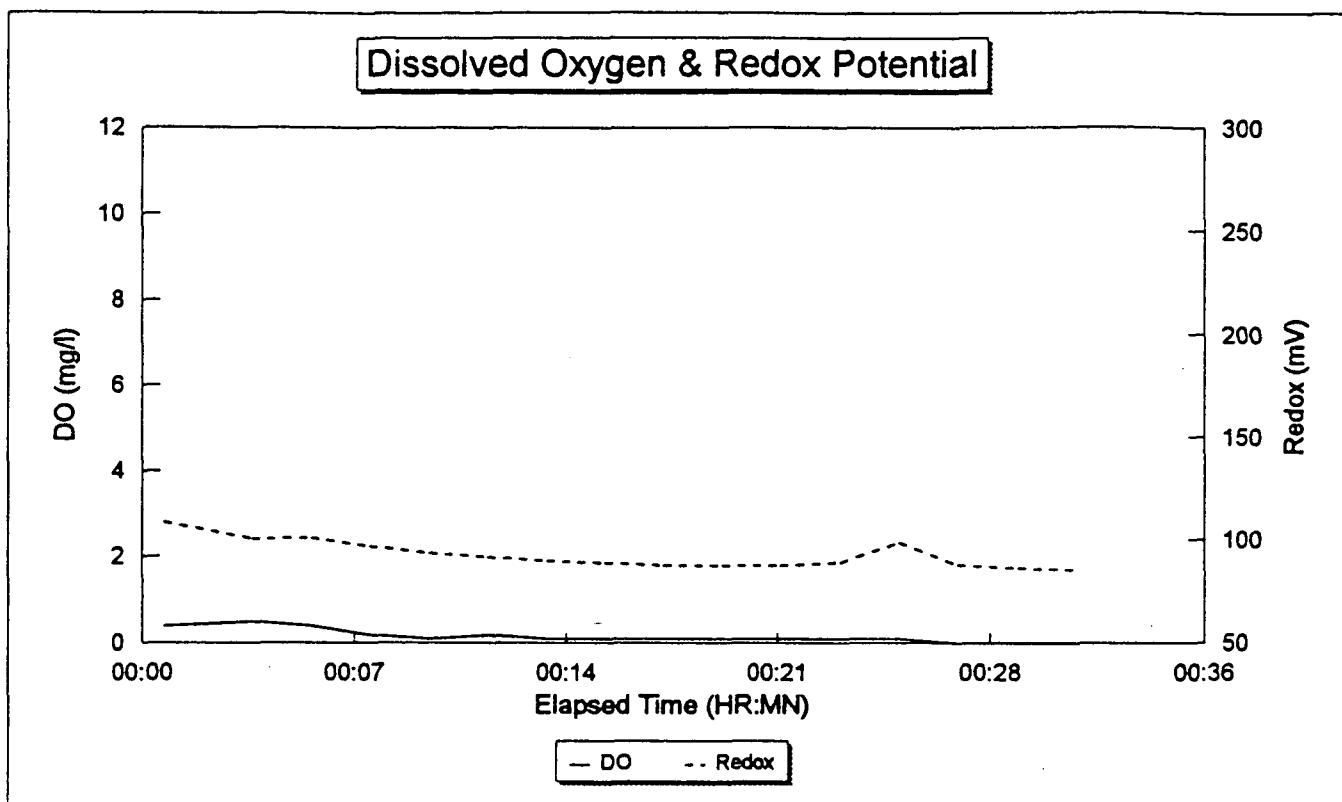
Field Parameter Data - Well 41691 - Test B
Pump: Marschalk Bladder Pump- Instrumentation: Solomat



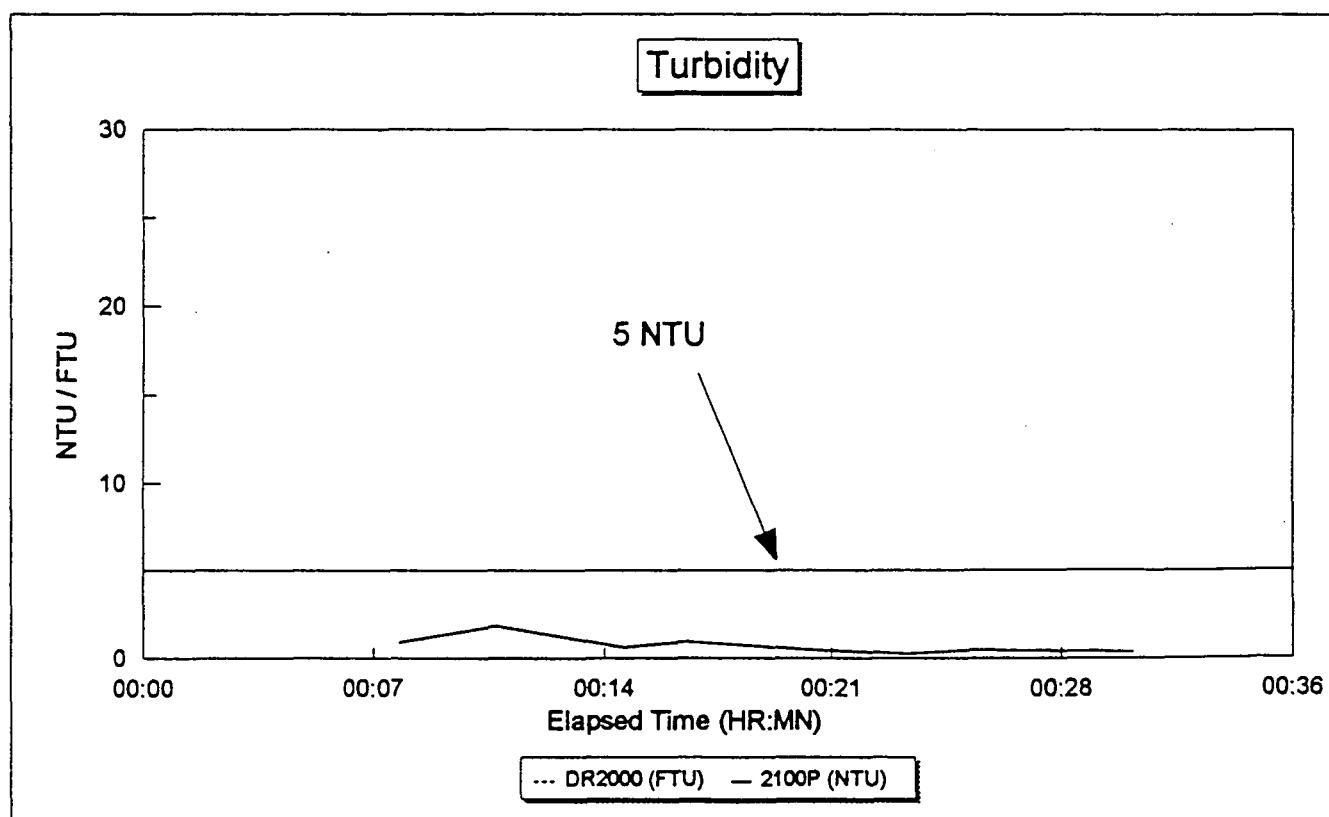
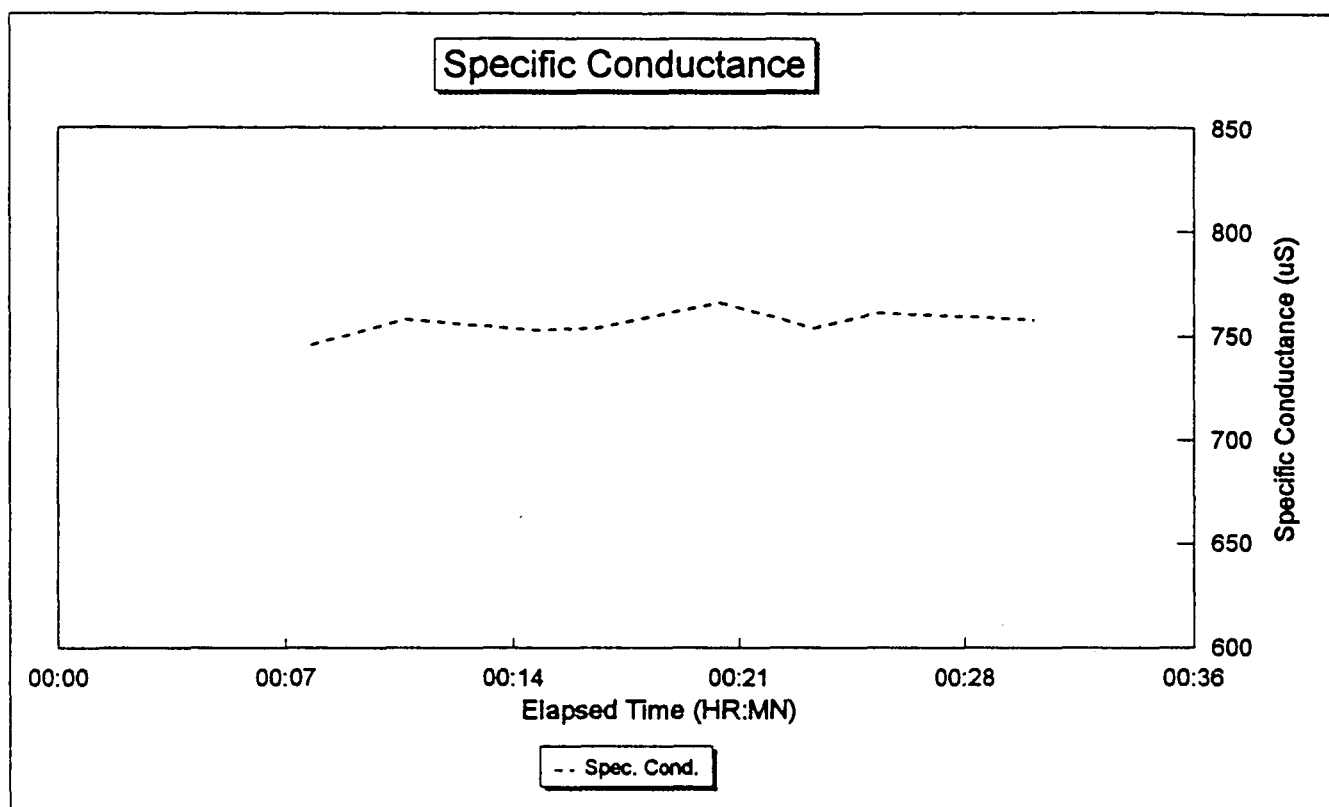
Field Parameter Data - Well 41691 - Test C
Pump: Grundfos - Instrumentation: Orion / Geotech Flowcell



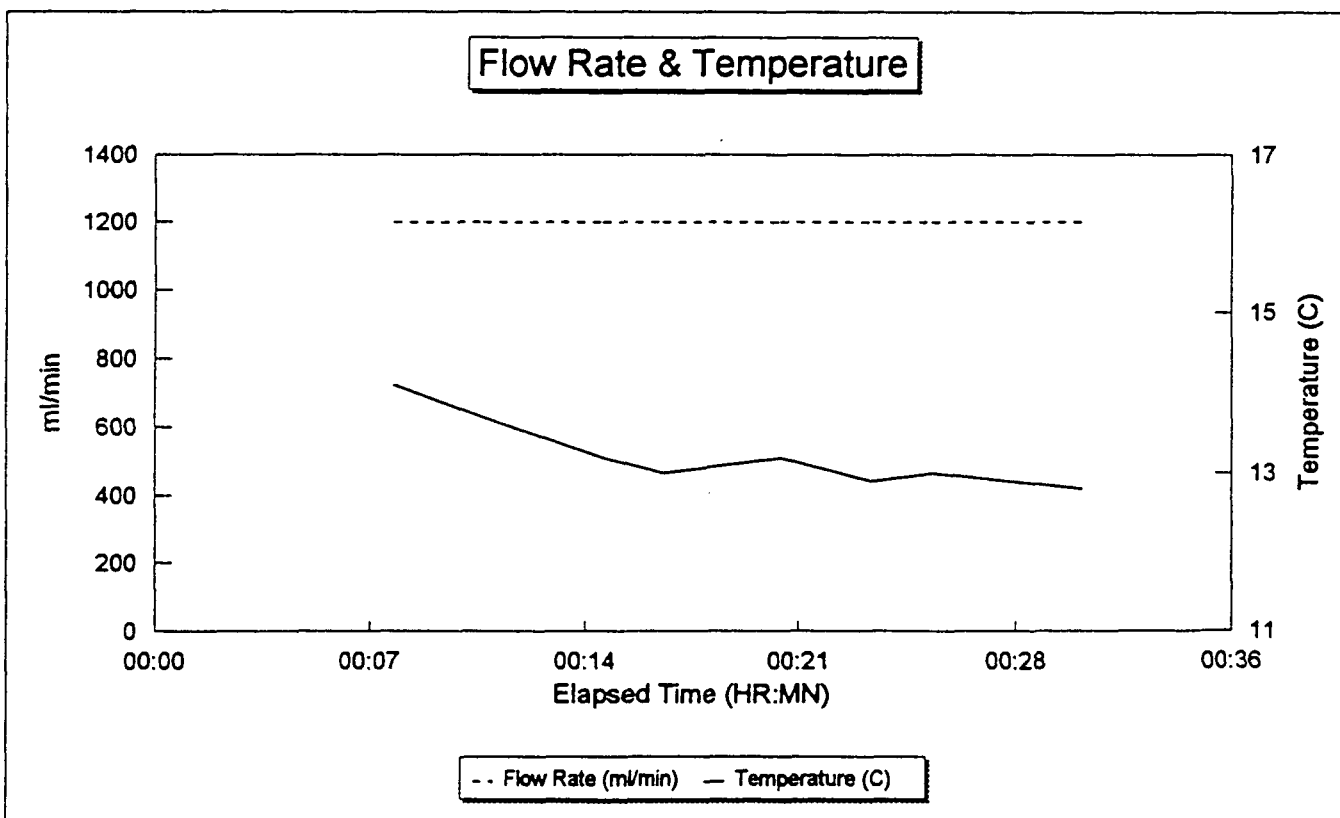
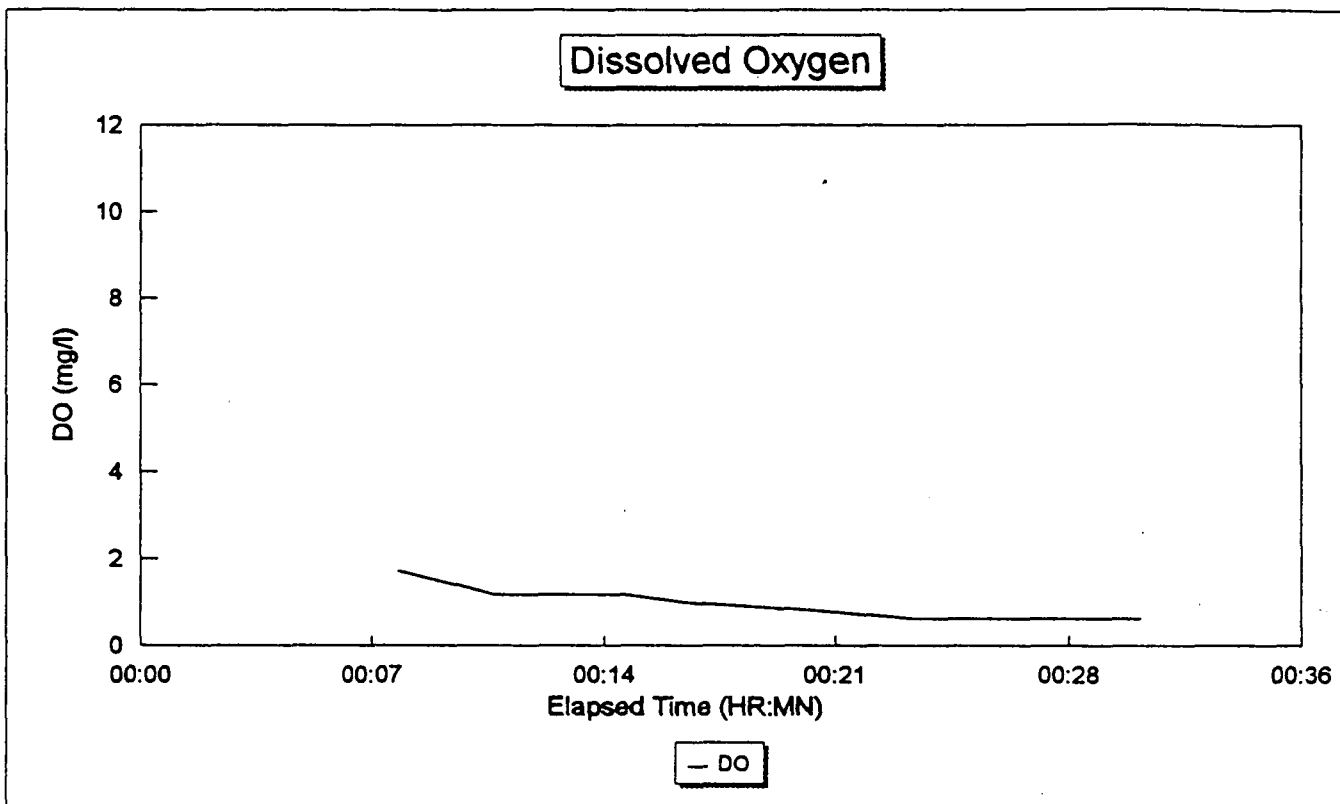
Field Parameter Data - Well 41691 - Test C
Pump: Grundfos - Instrumentation: Orion / Geotech Flowcell



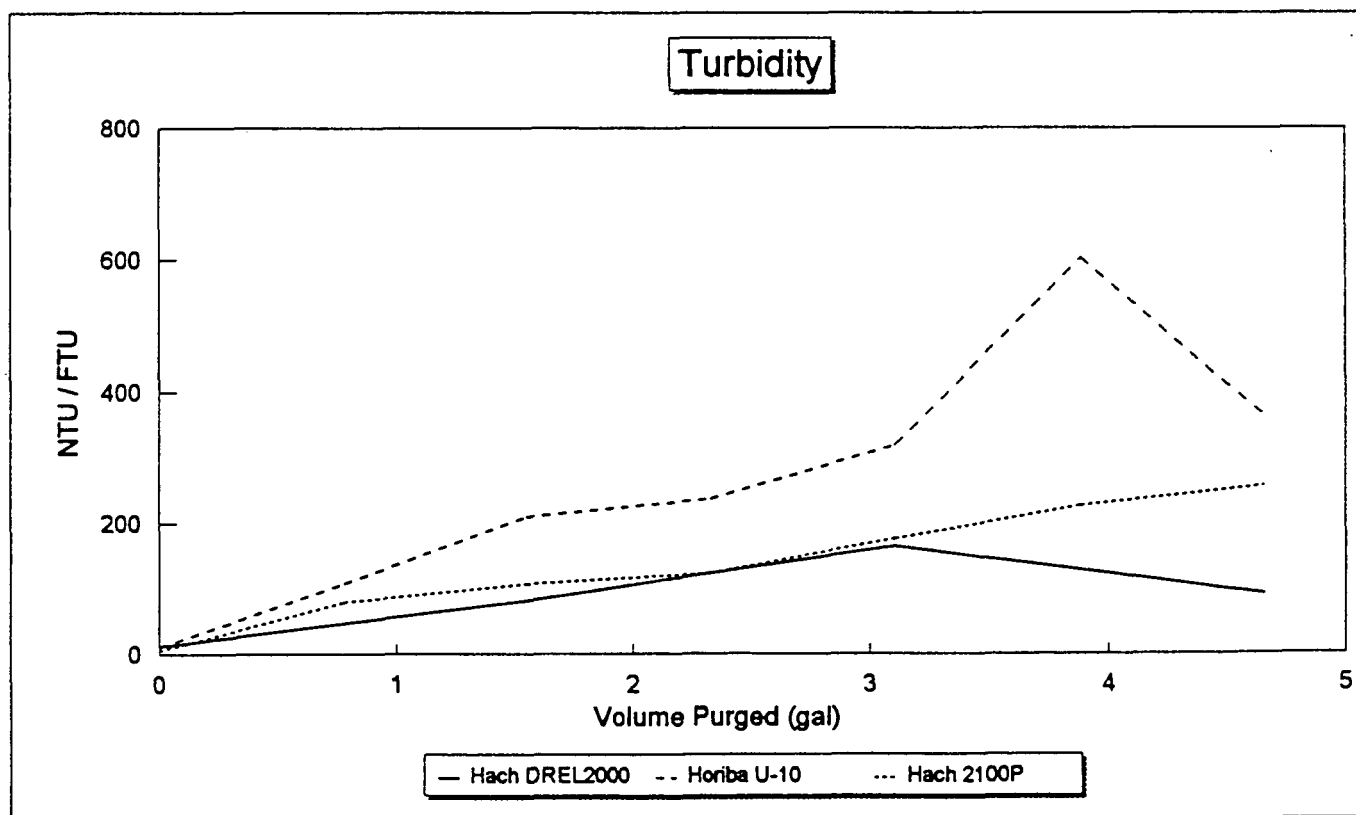
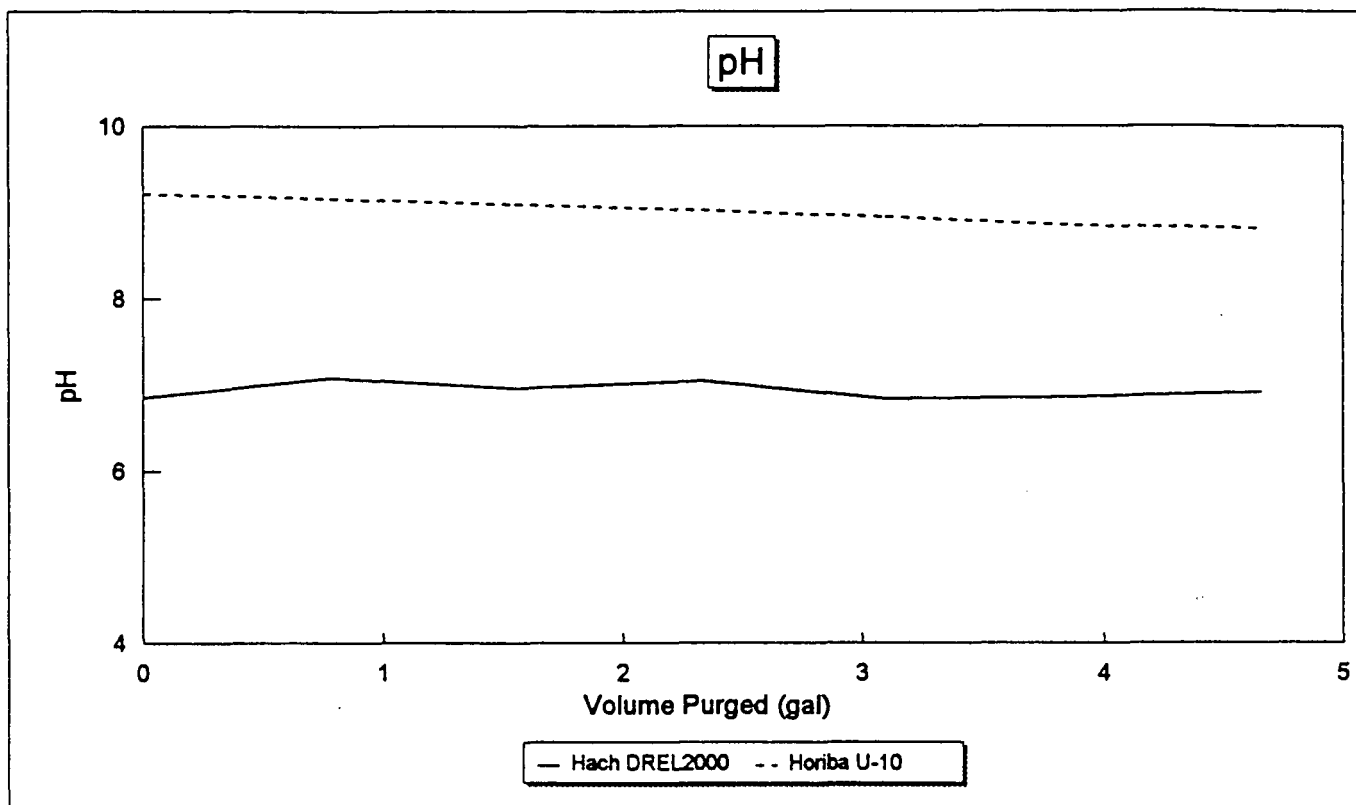
Field Parameter Data - Well 41691- Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver



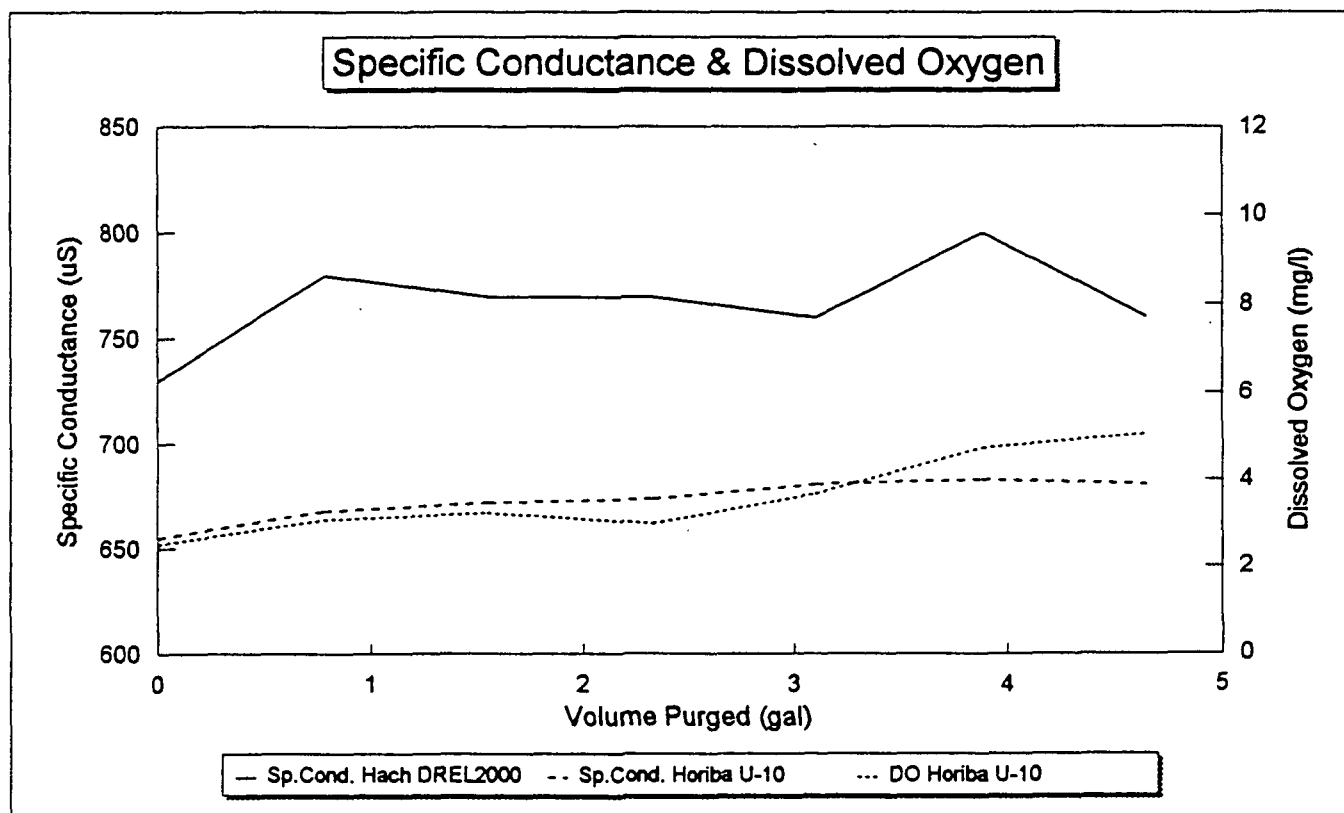
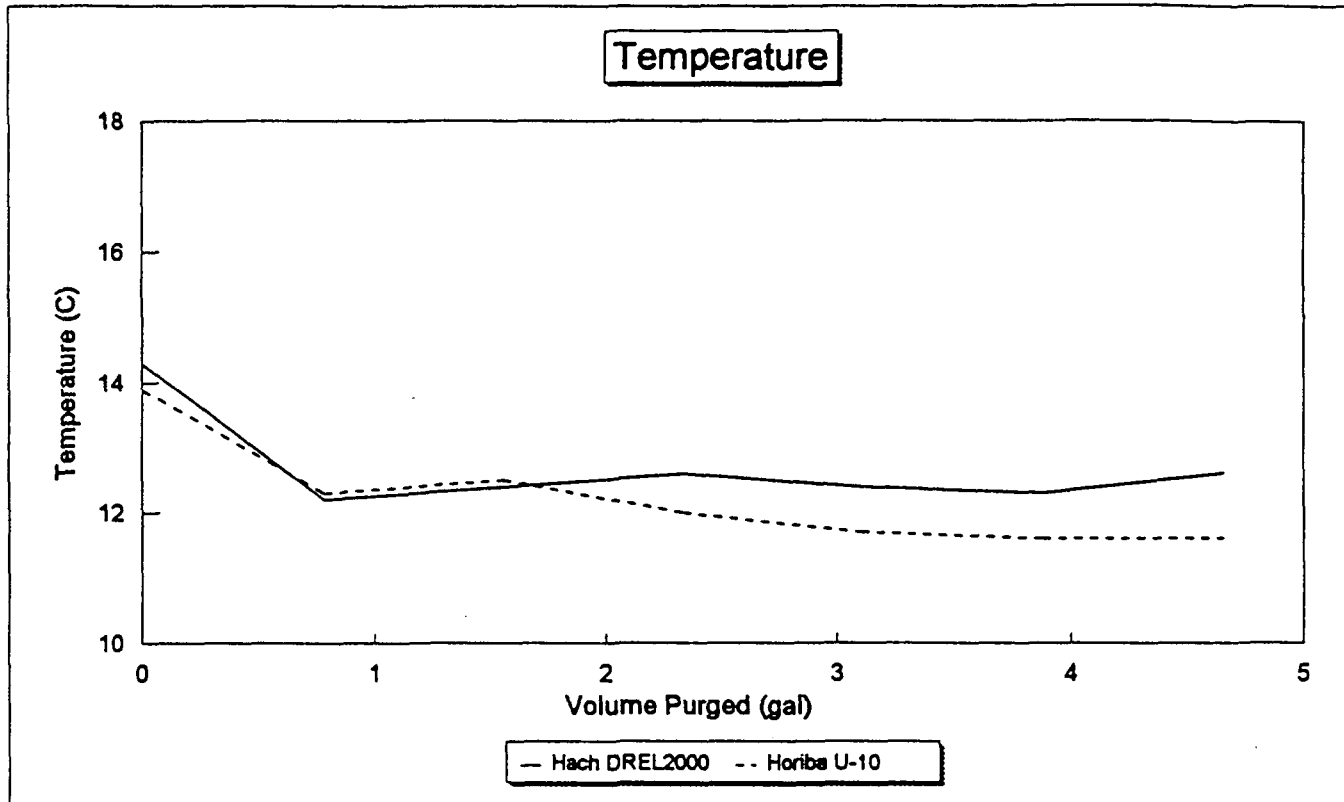
Field Parameter Data - Well 41691- Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver



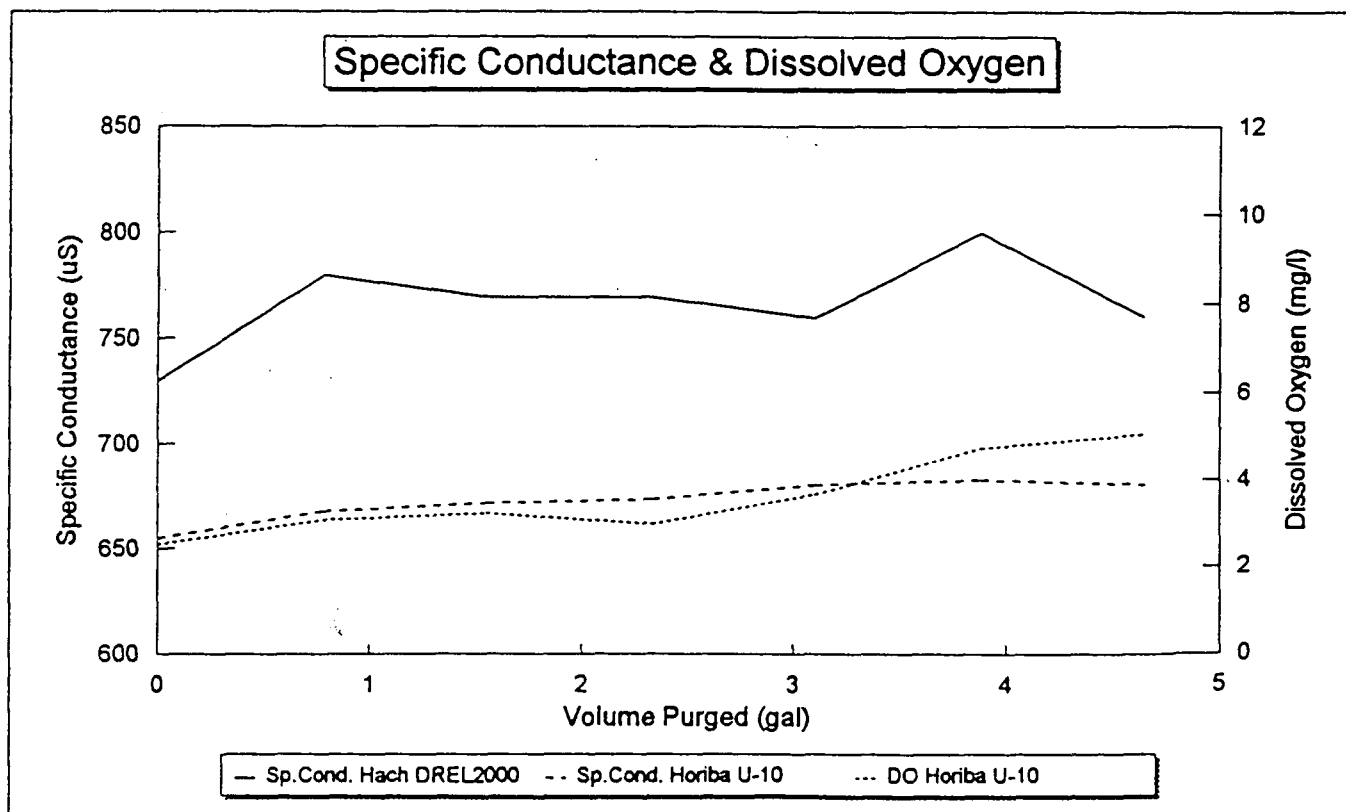
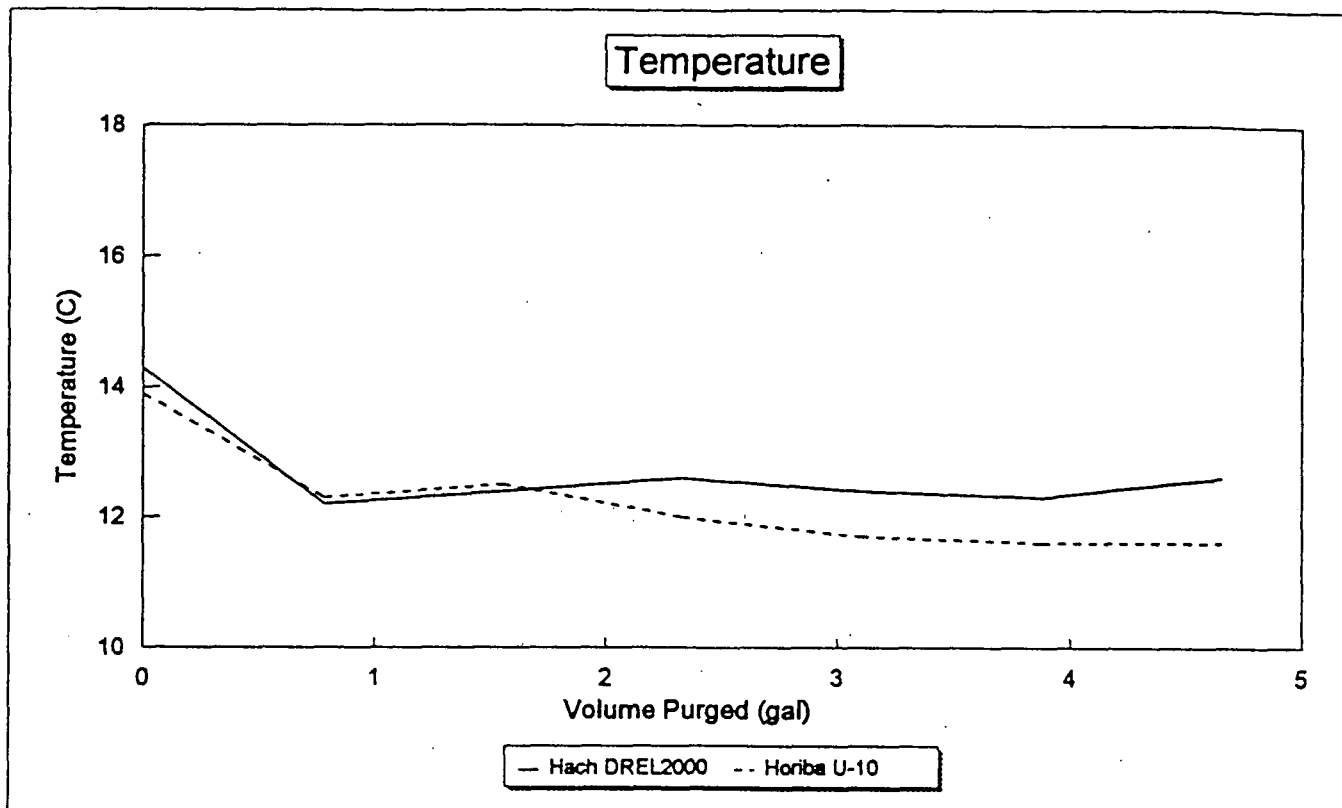
Field Parameter Data - Well 41691 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10



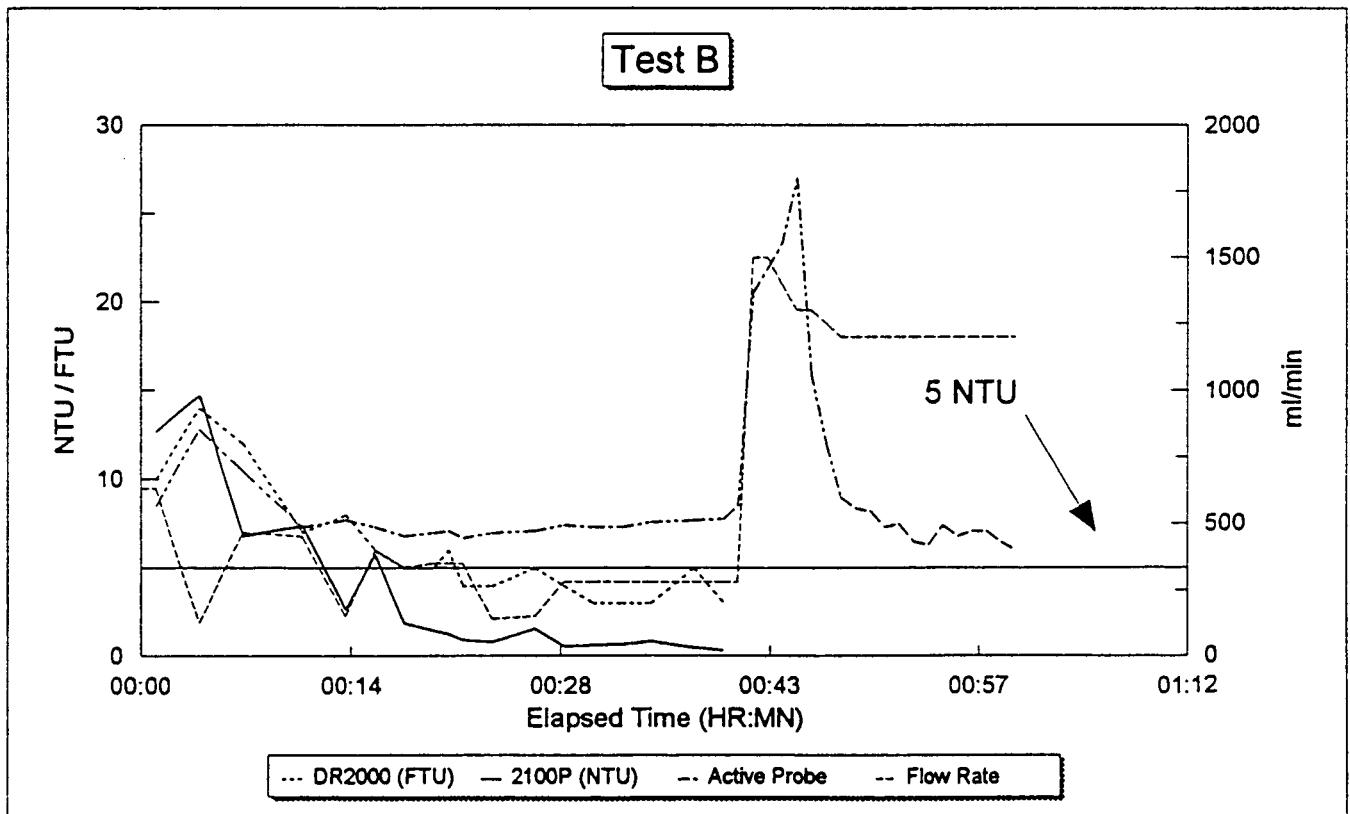
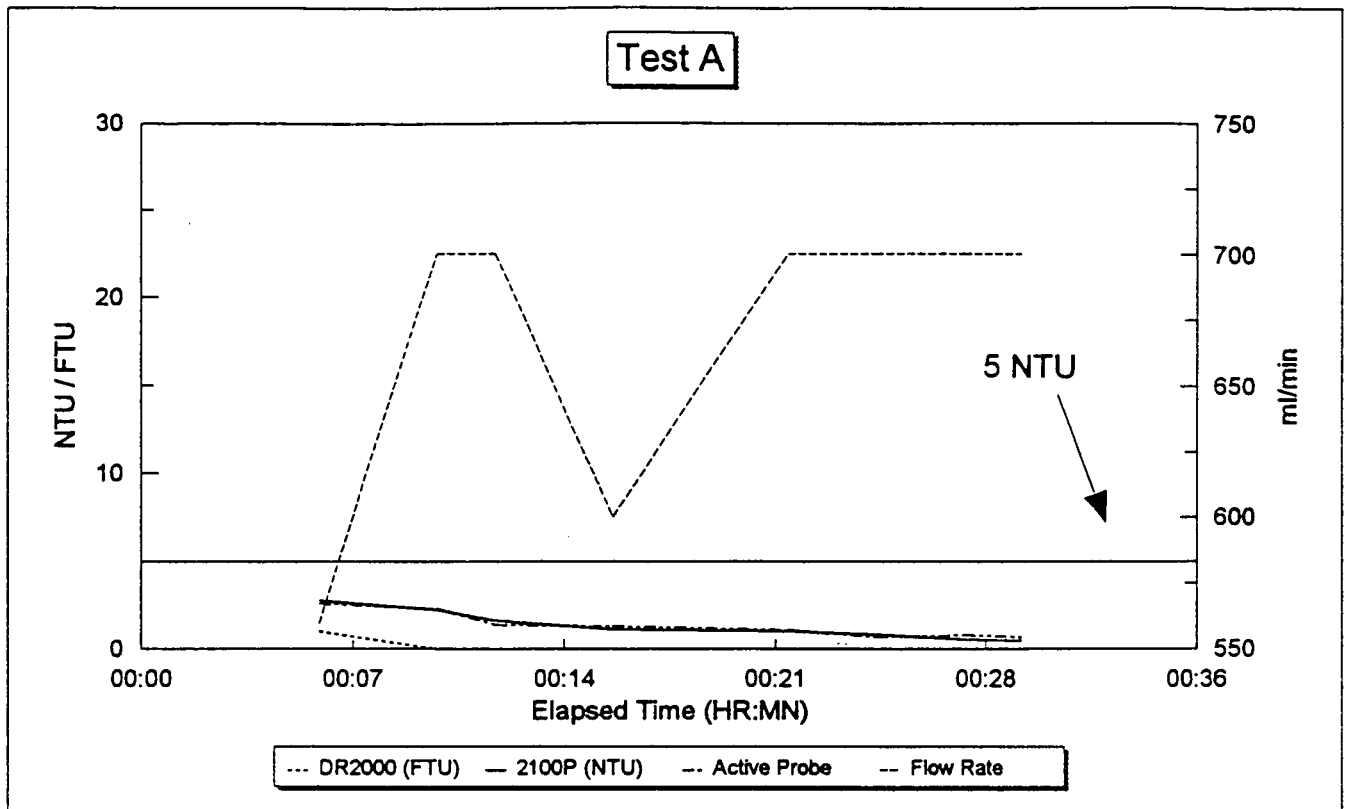
Field Parameter Data - Well 41691 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10



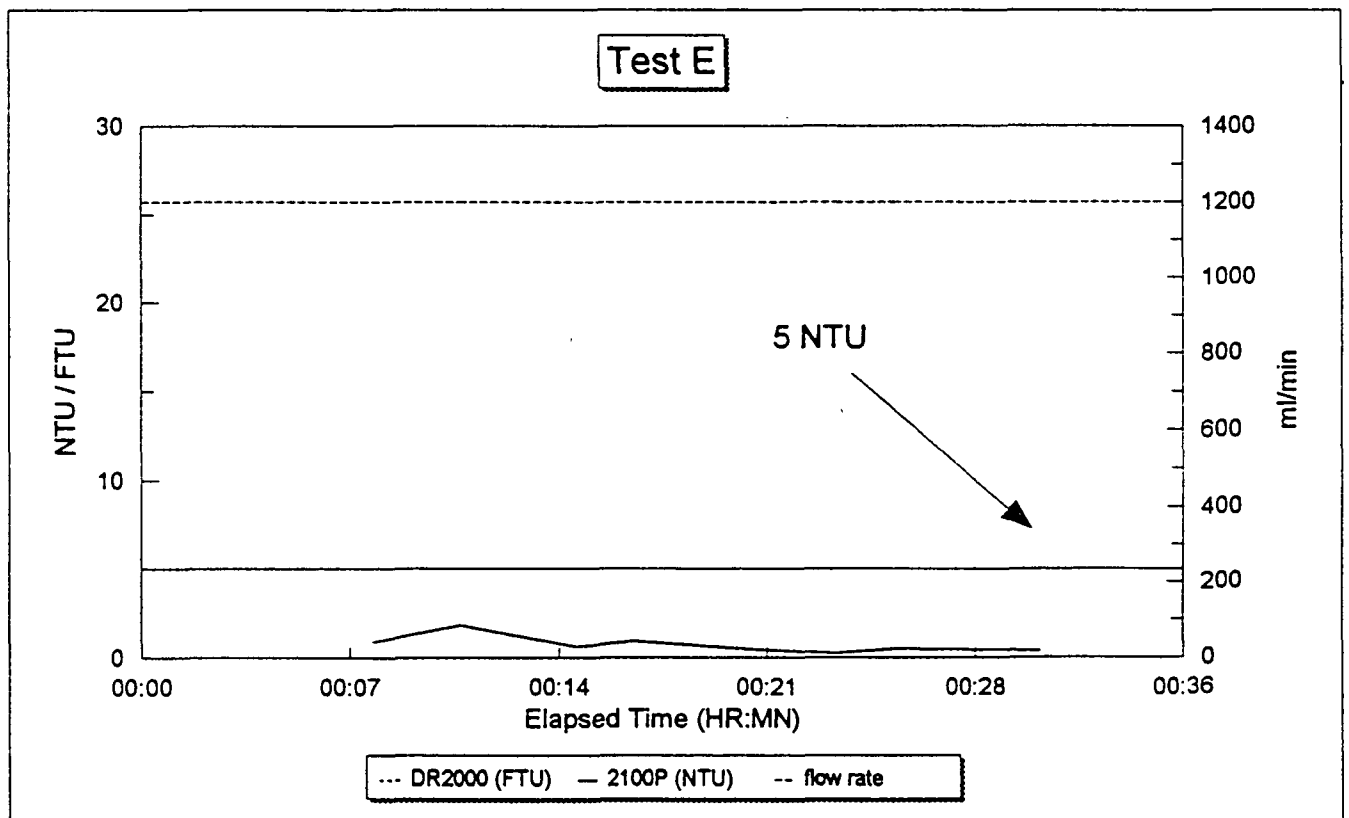
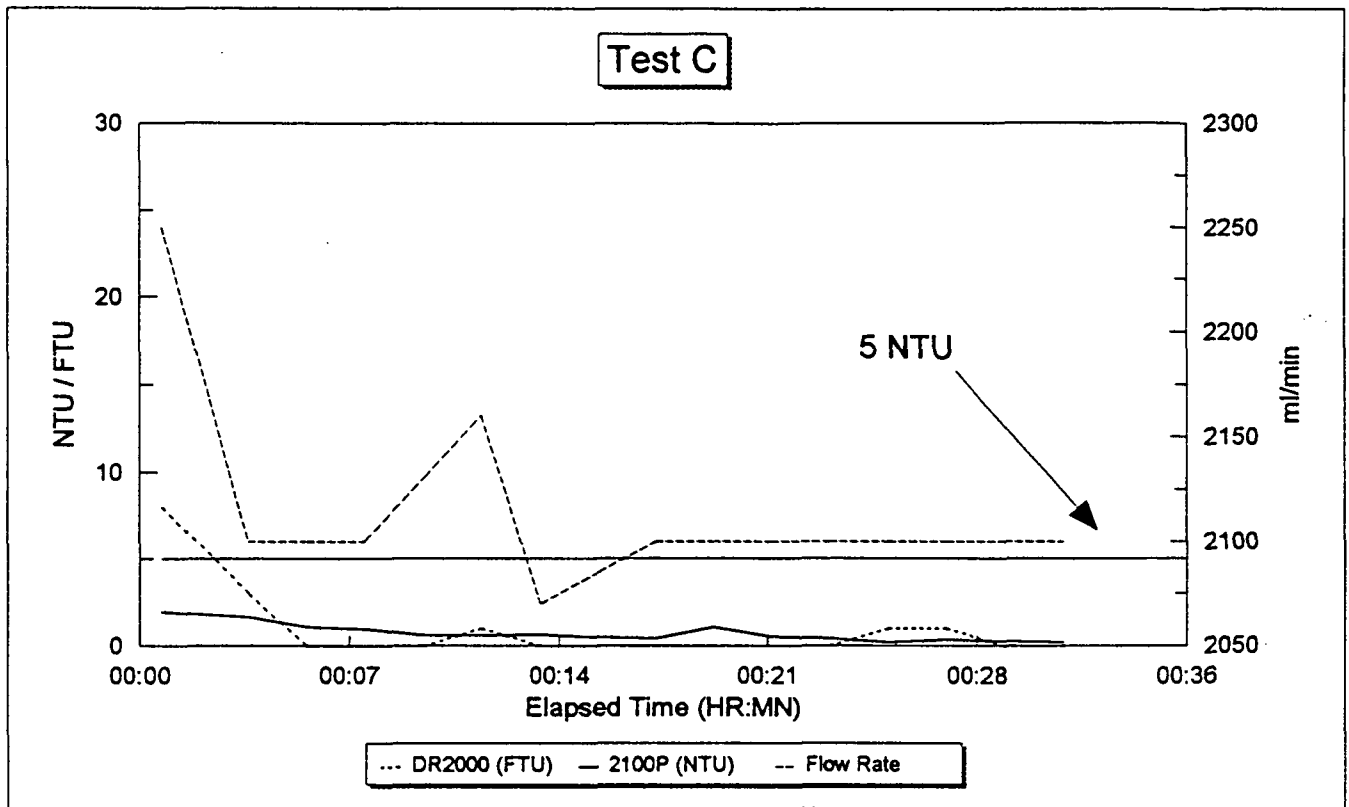
Field Parameter Data - Well 41691 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10



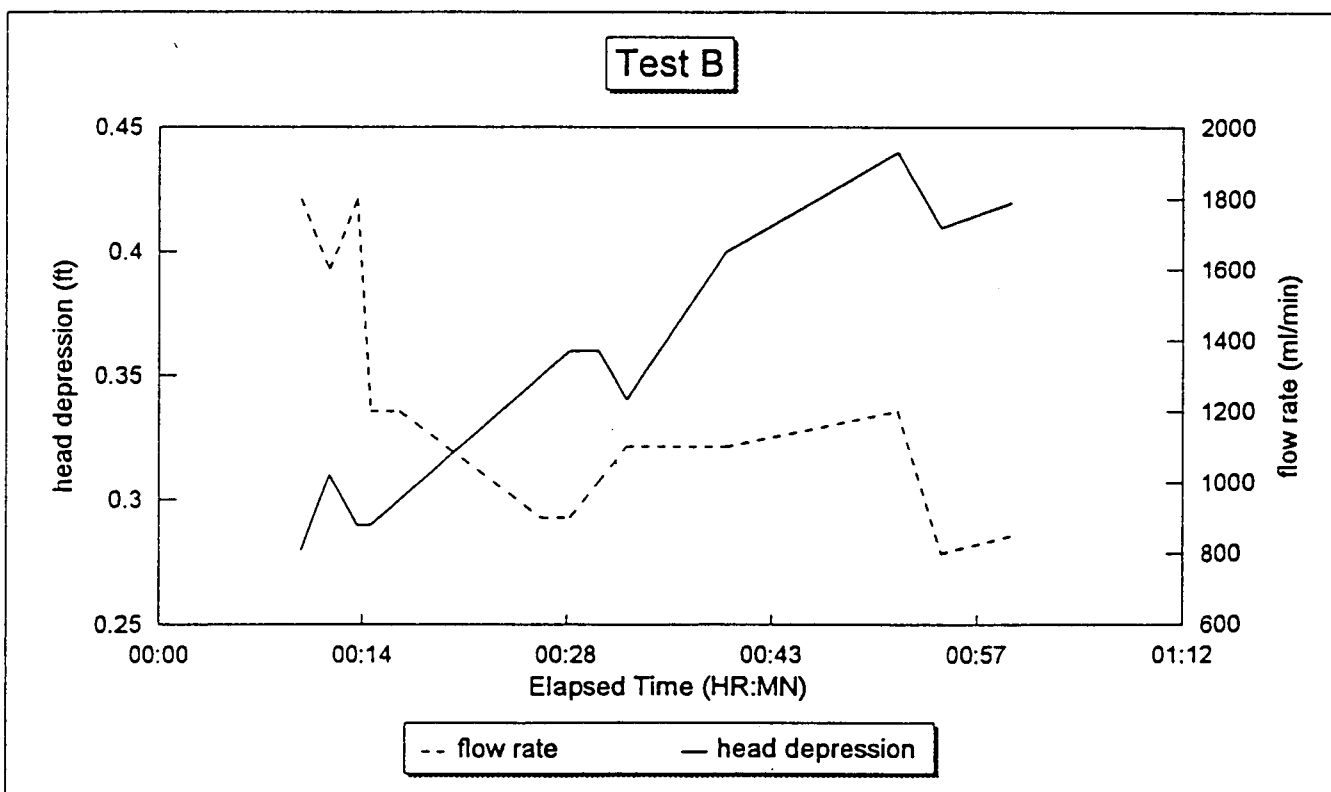
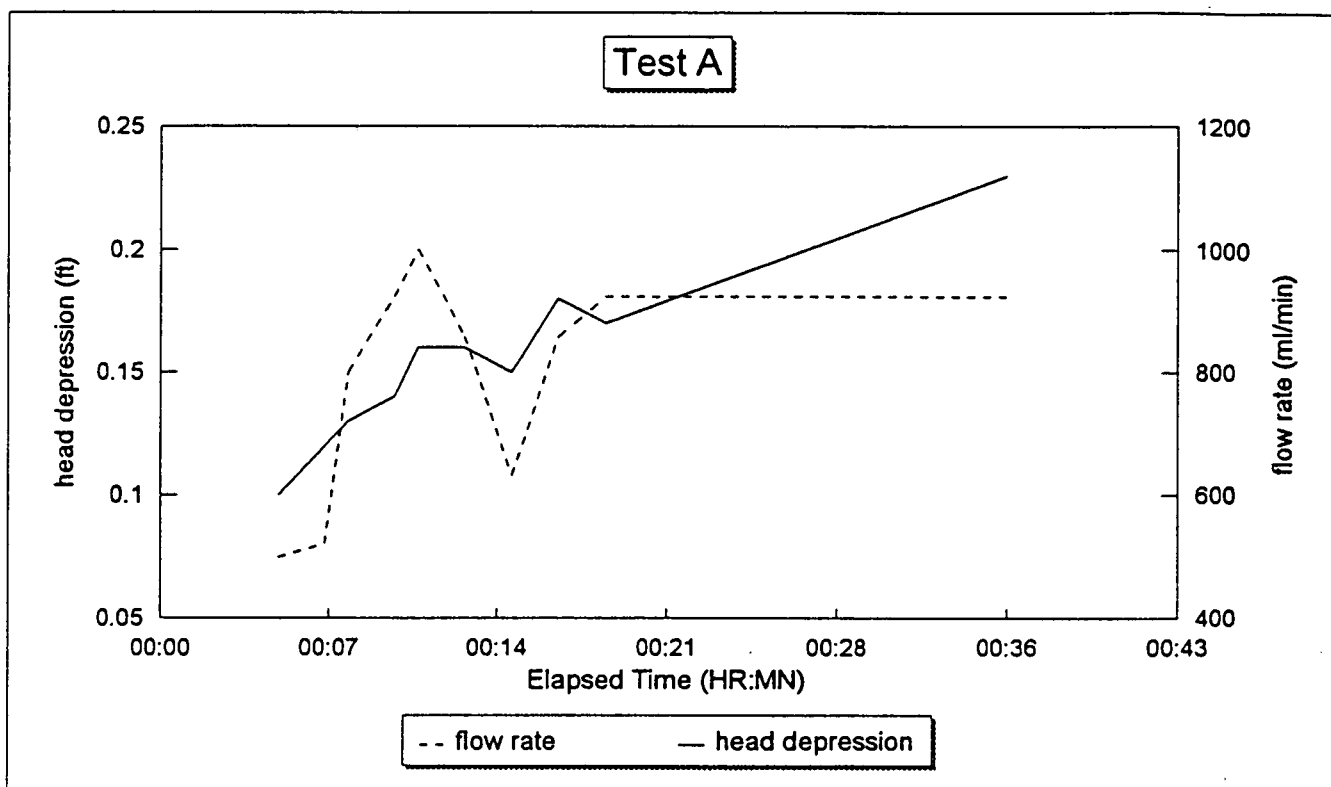
Flow vs Turbidity - Well 41691



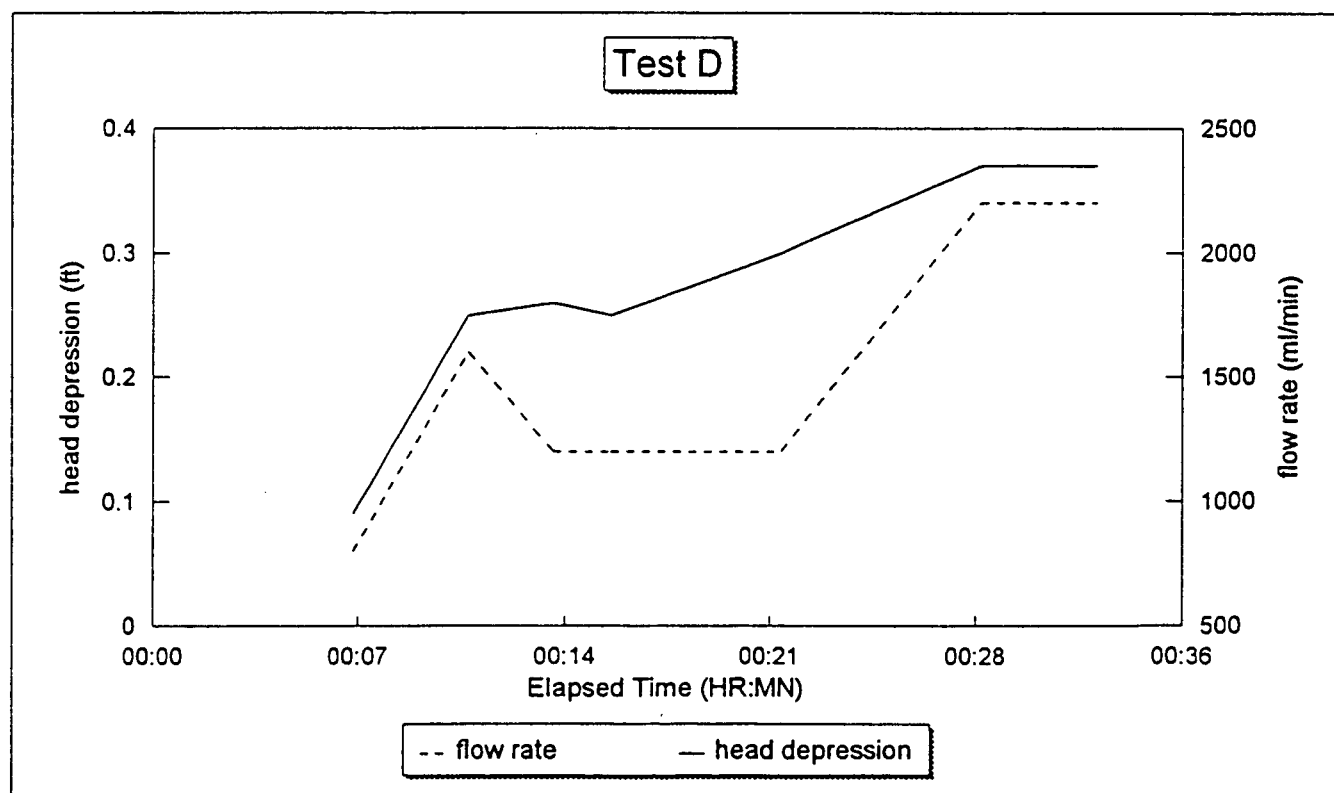
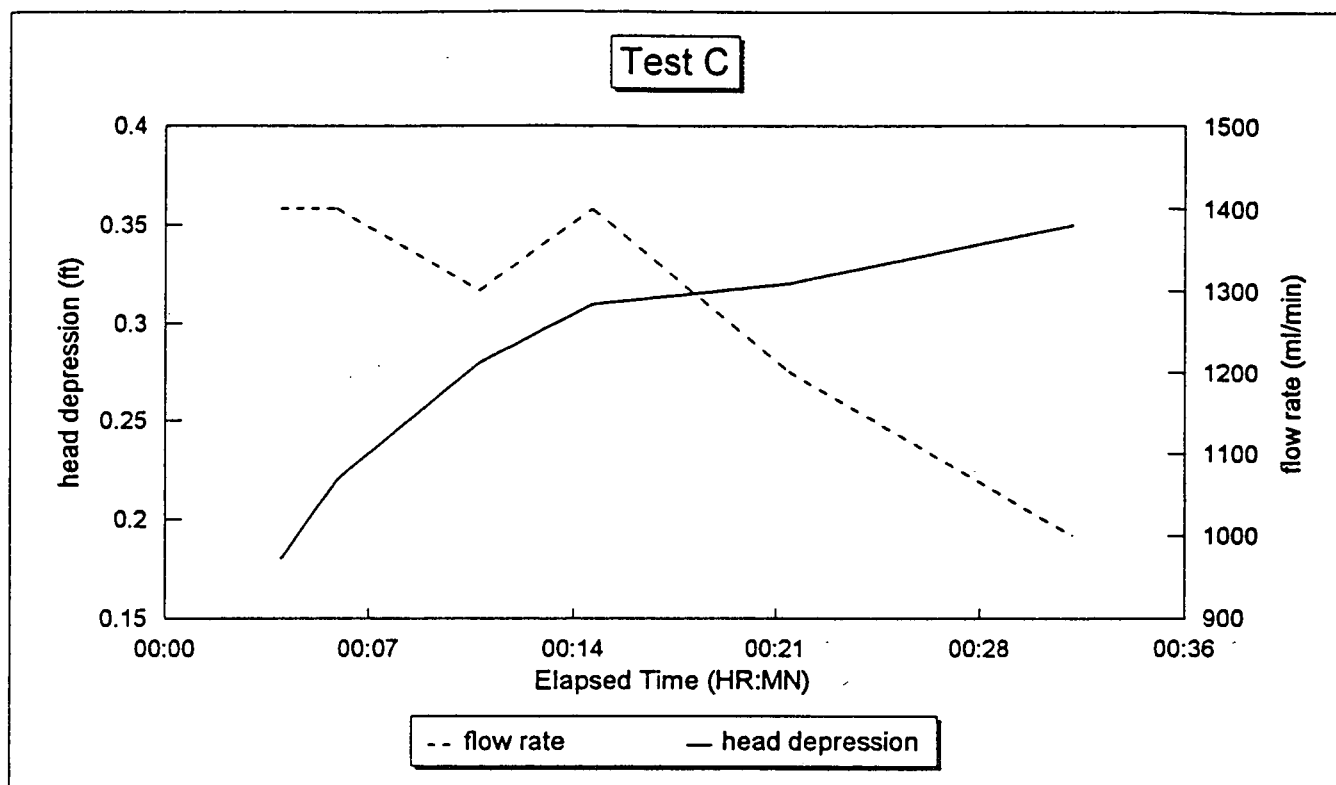
Flow vs Turbidity - Well 41691



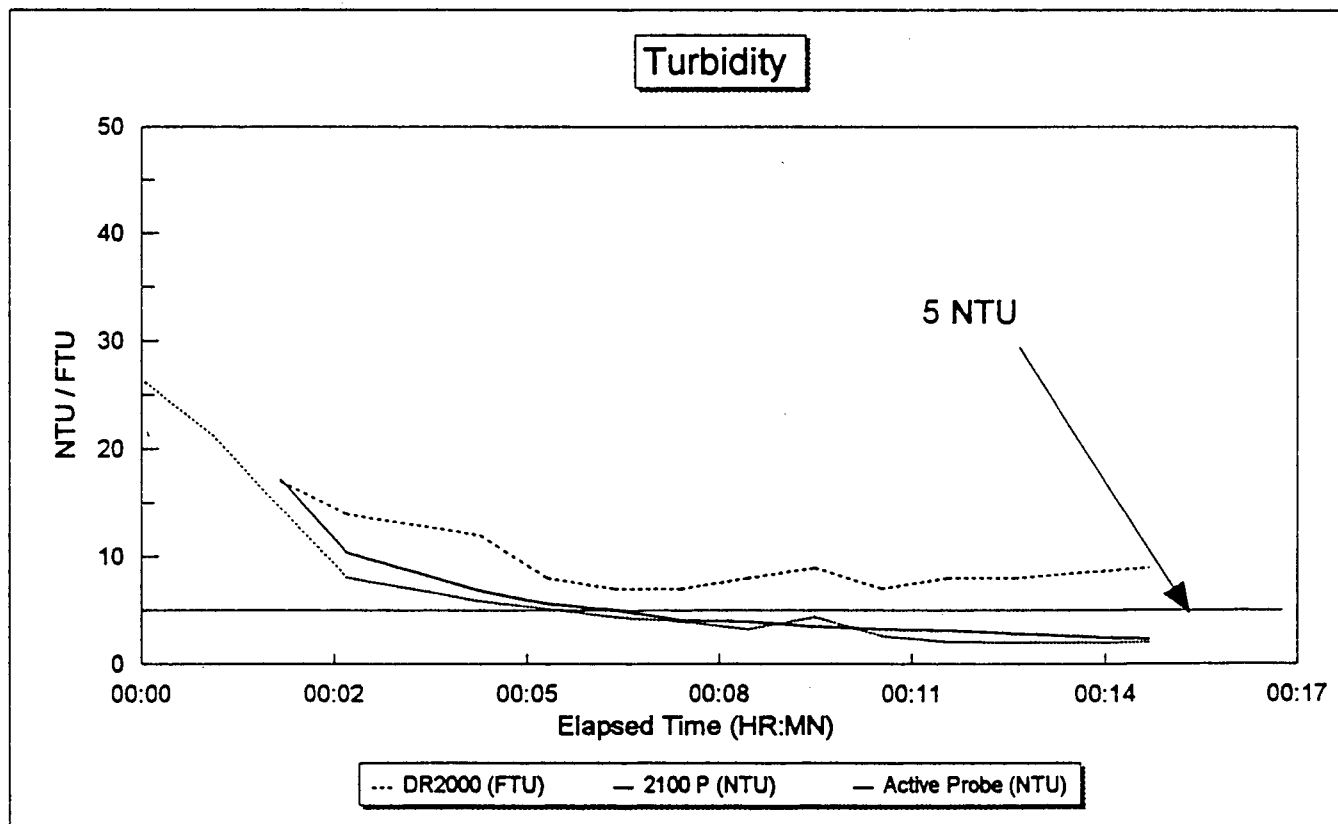
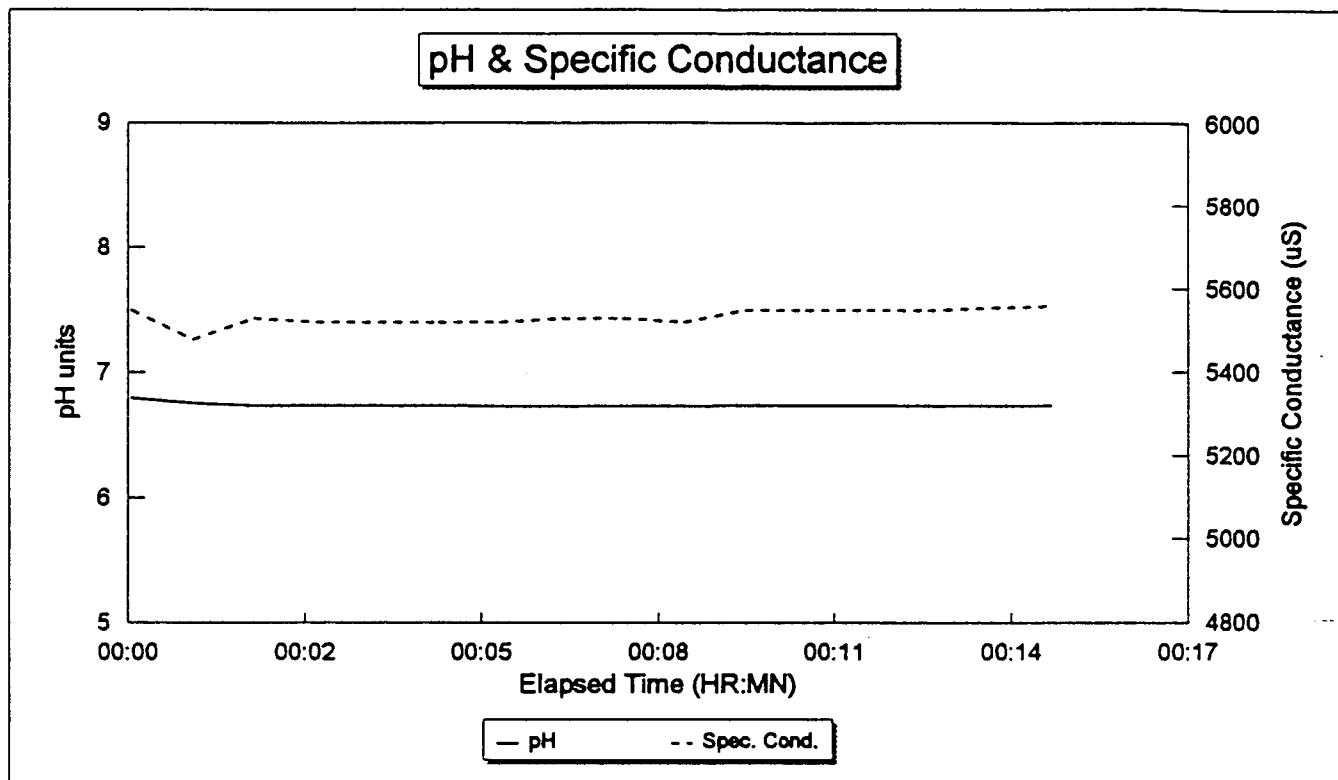
Head Depression vs Flow Rate - Well 1786



Head Depression vs Flow Rate - Well 1786

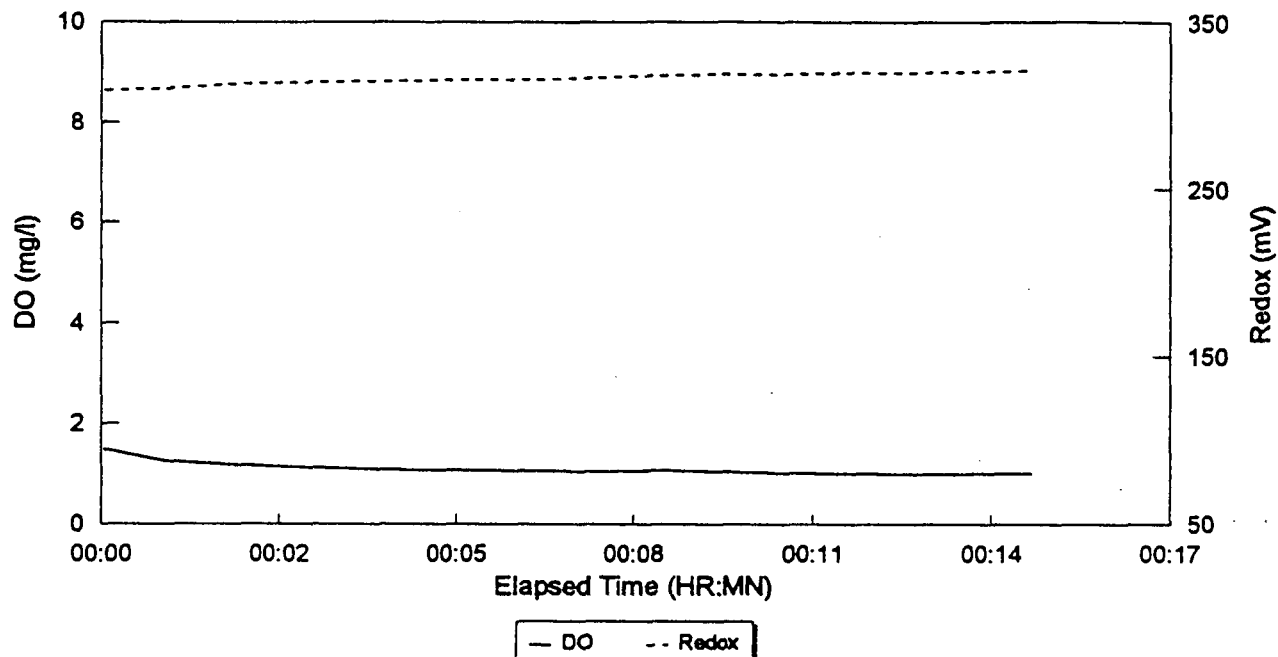


Field Parameter Data - Well 1786 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20

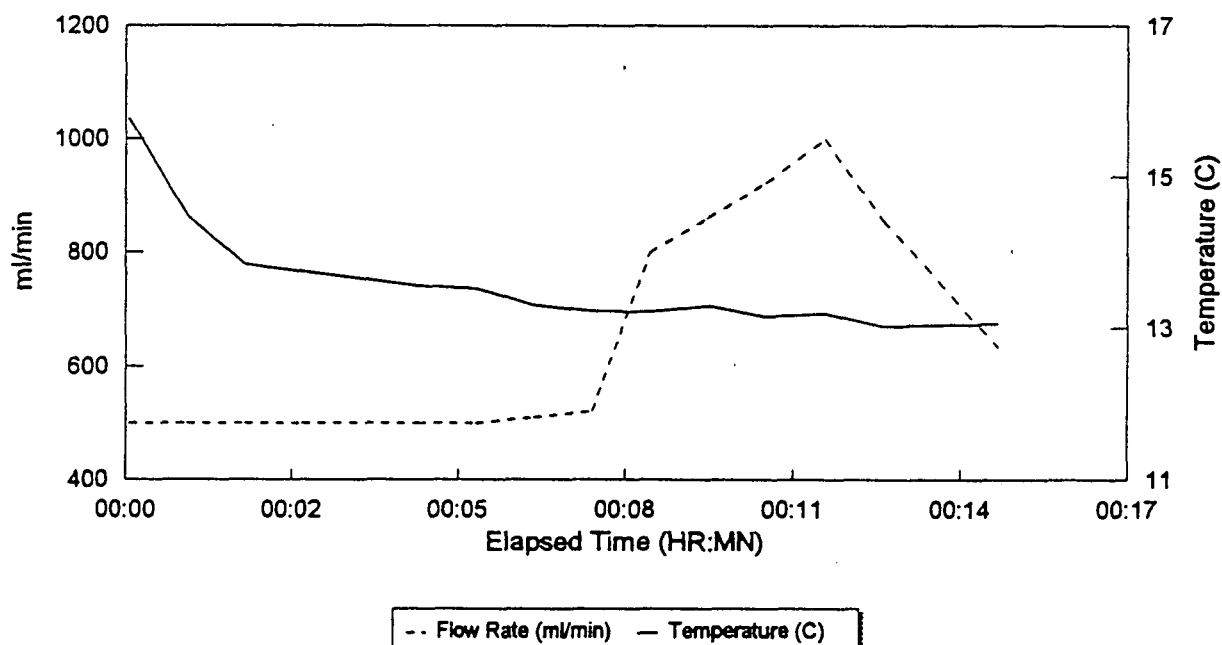


Field Parameter Data - Well 1786 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20

Dissolved Oxygen & Redox Potential

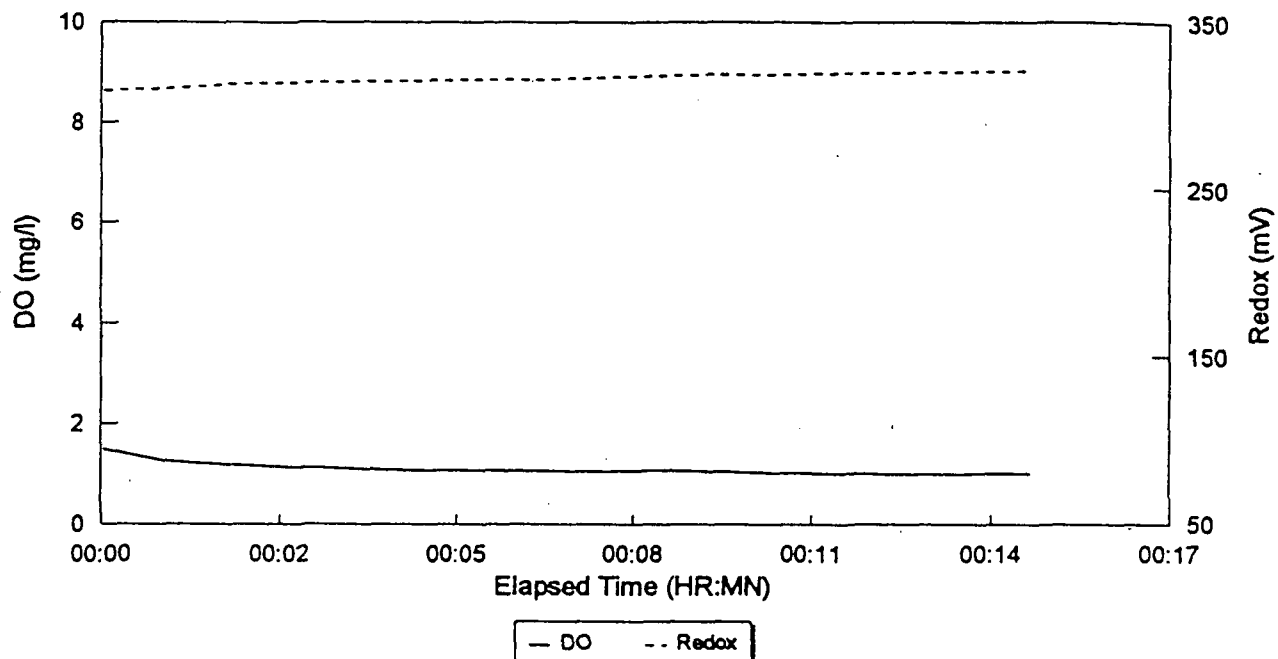


Flow Rate & Temperature

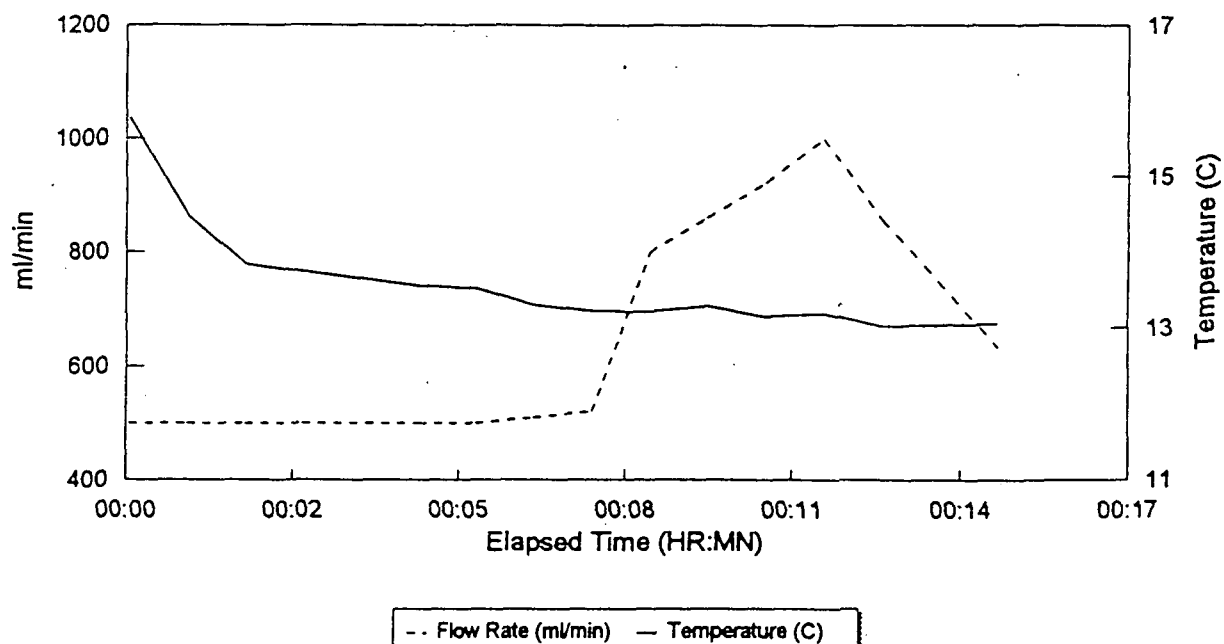


Field Parameter Data - Well 1786 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20

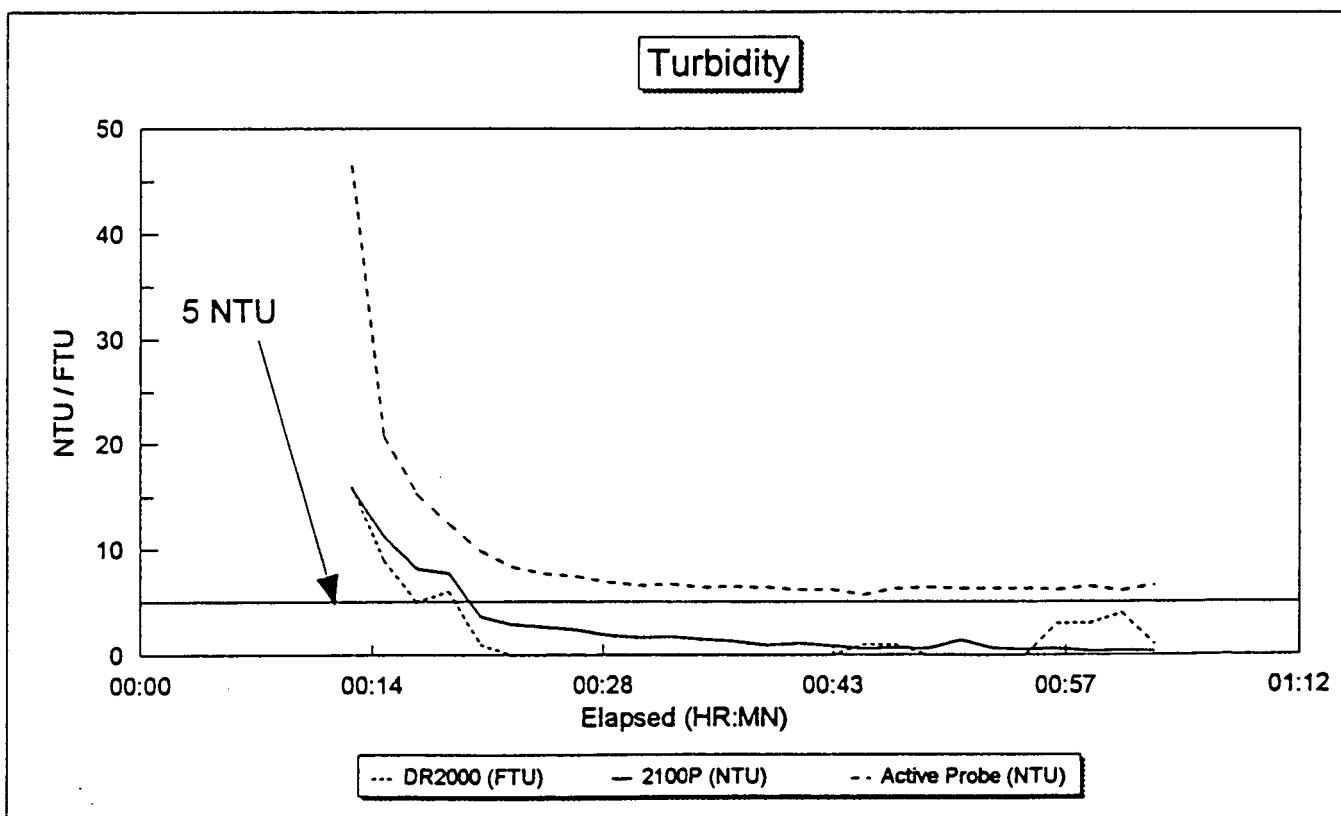
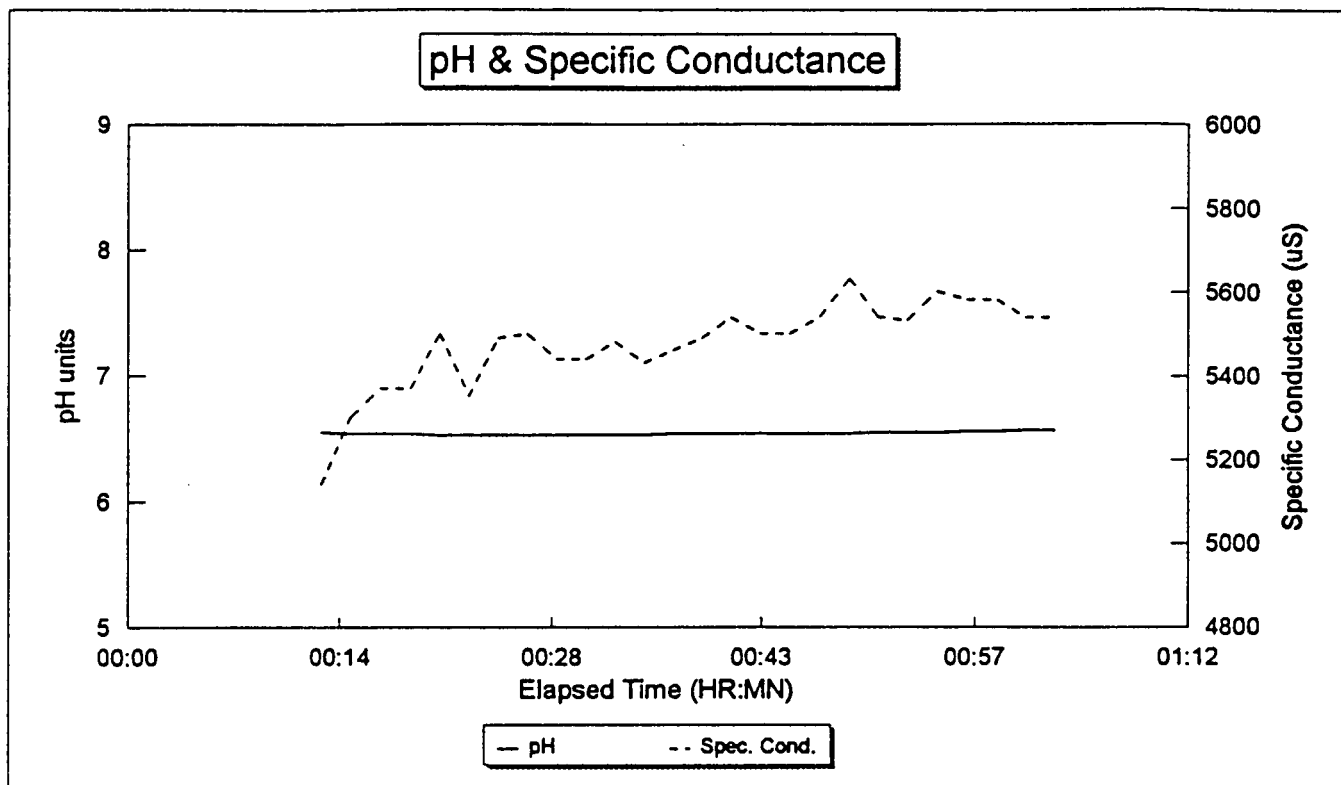
Dissolved Oxygen & Redox Potential



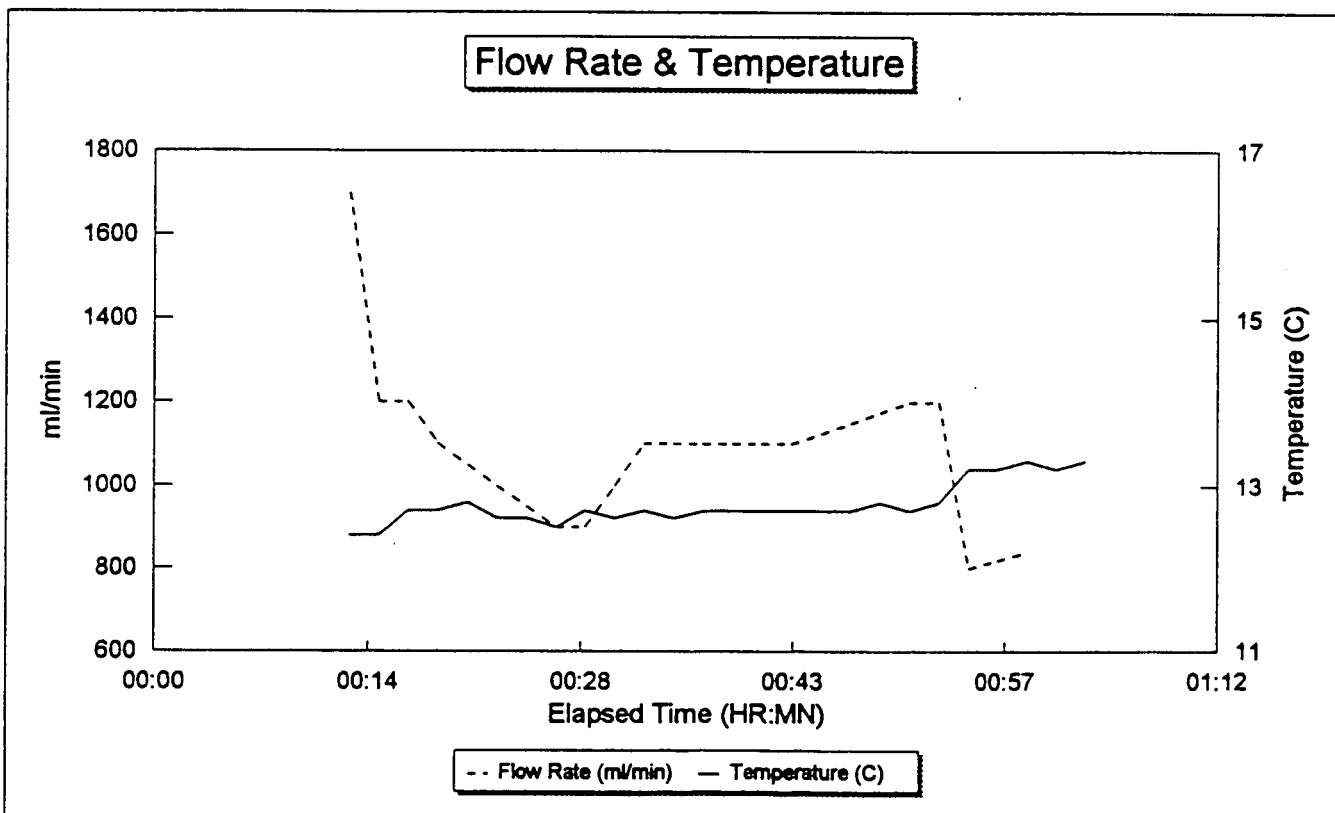
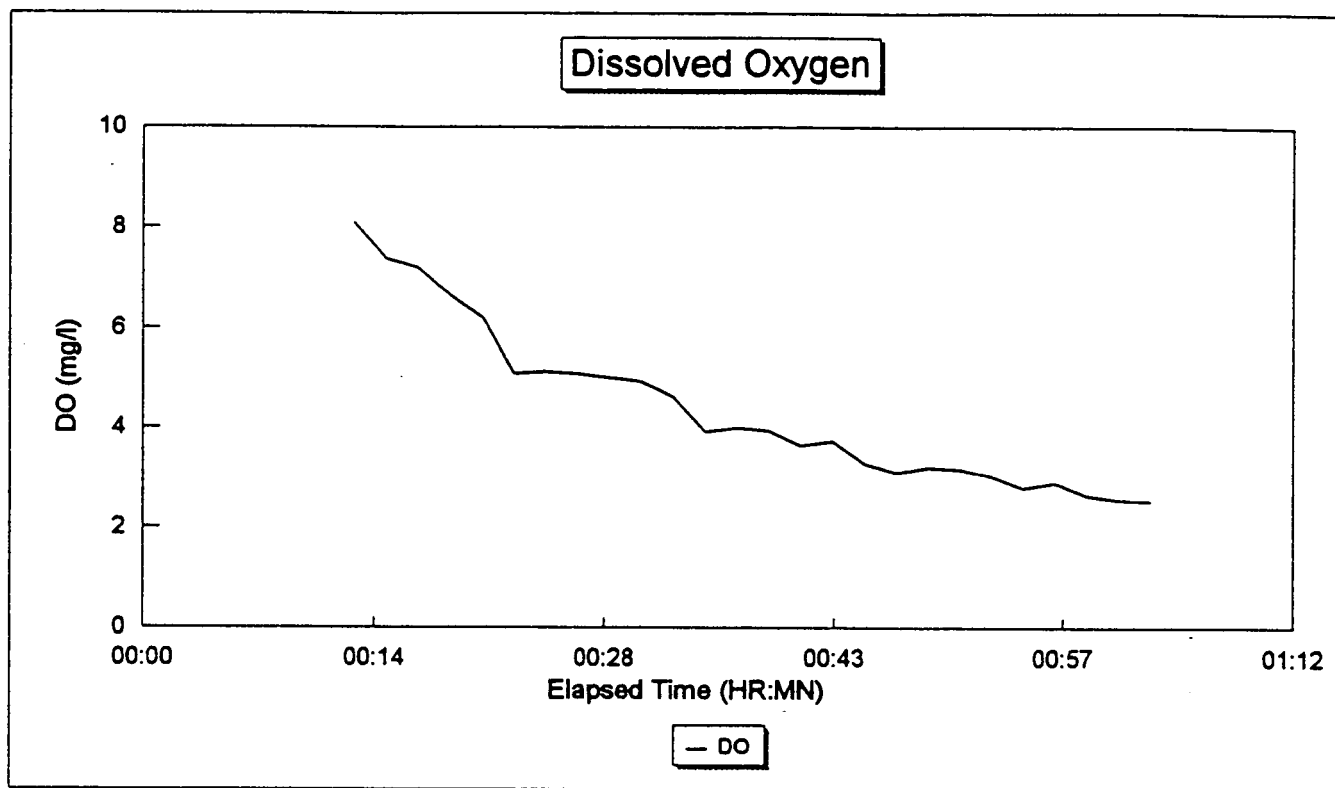
Flow Rate & Temperature



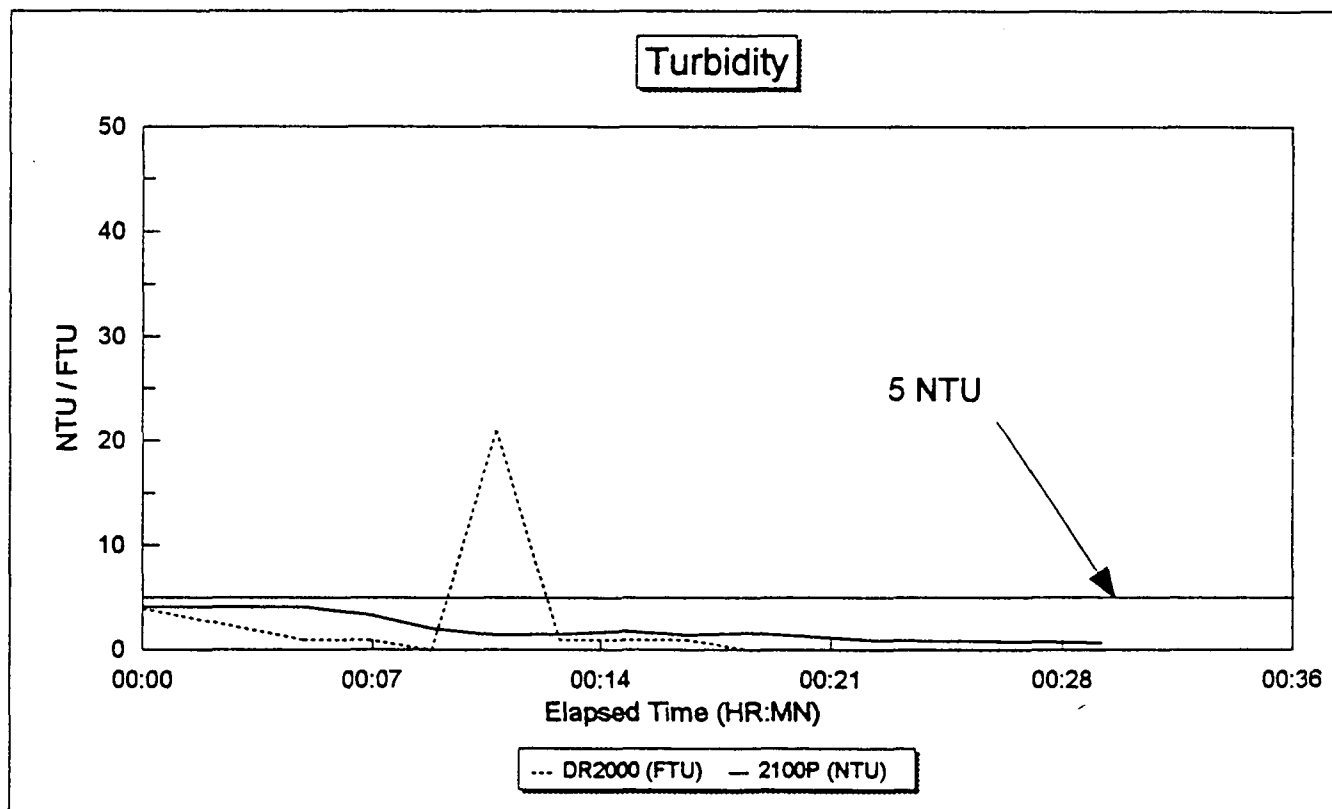
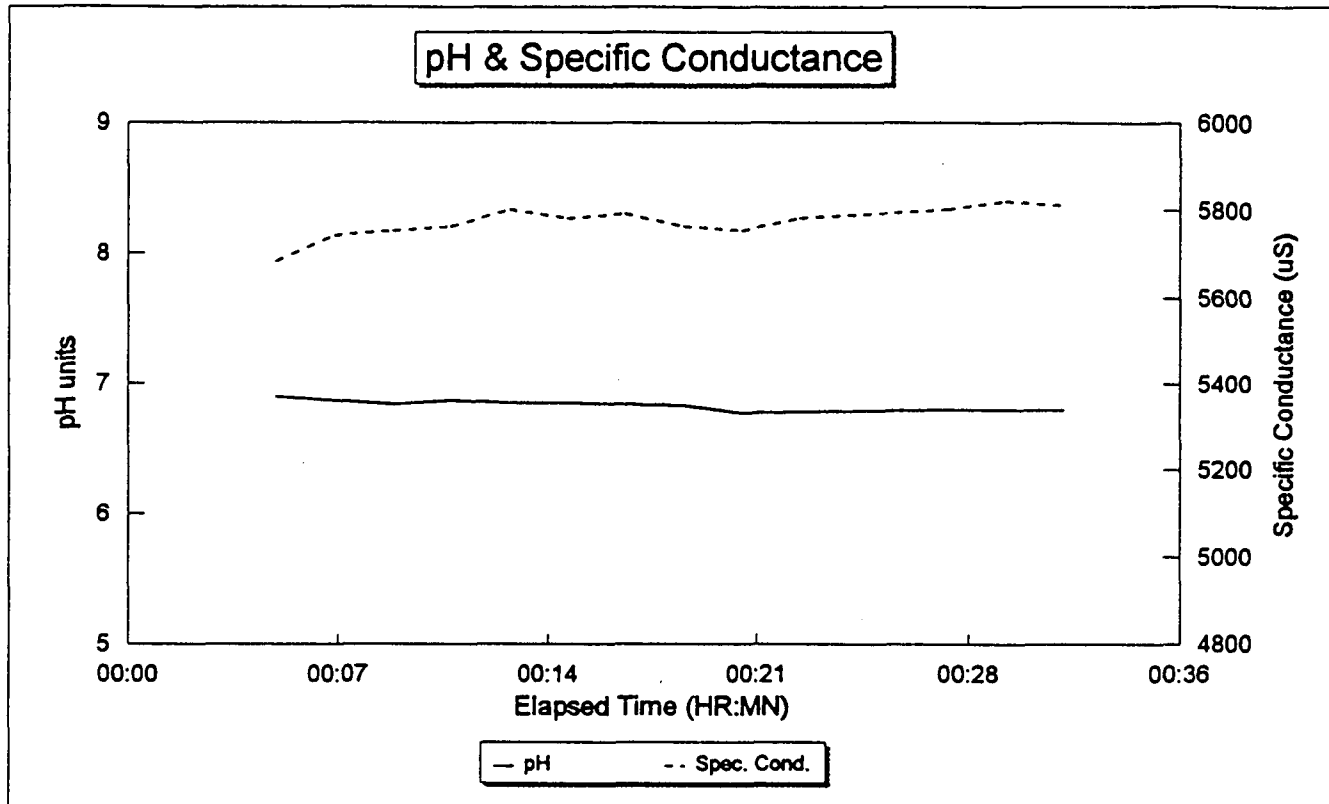
Field Parameter Data - Well 1786 - Test B
Pump: Marshalk Bladder Pump - Instrumentation: Solomat



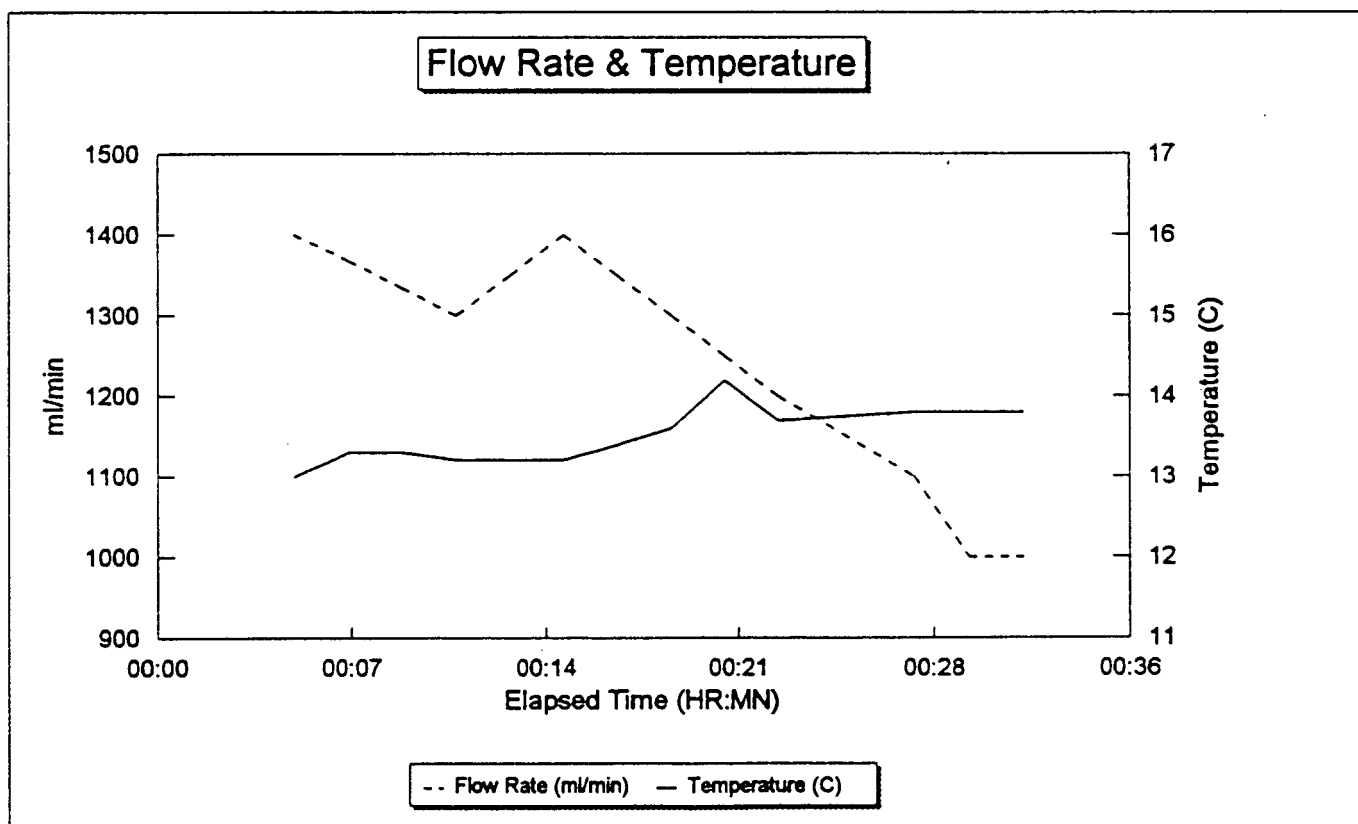
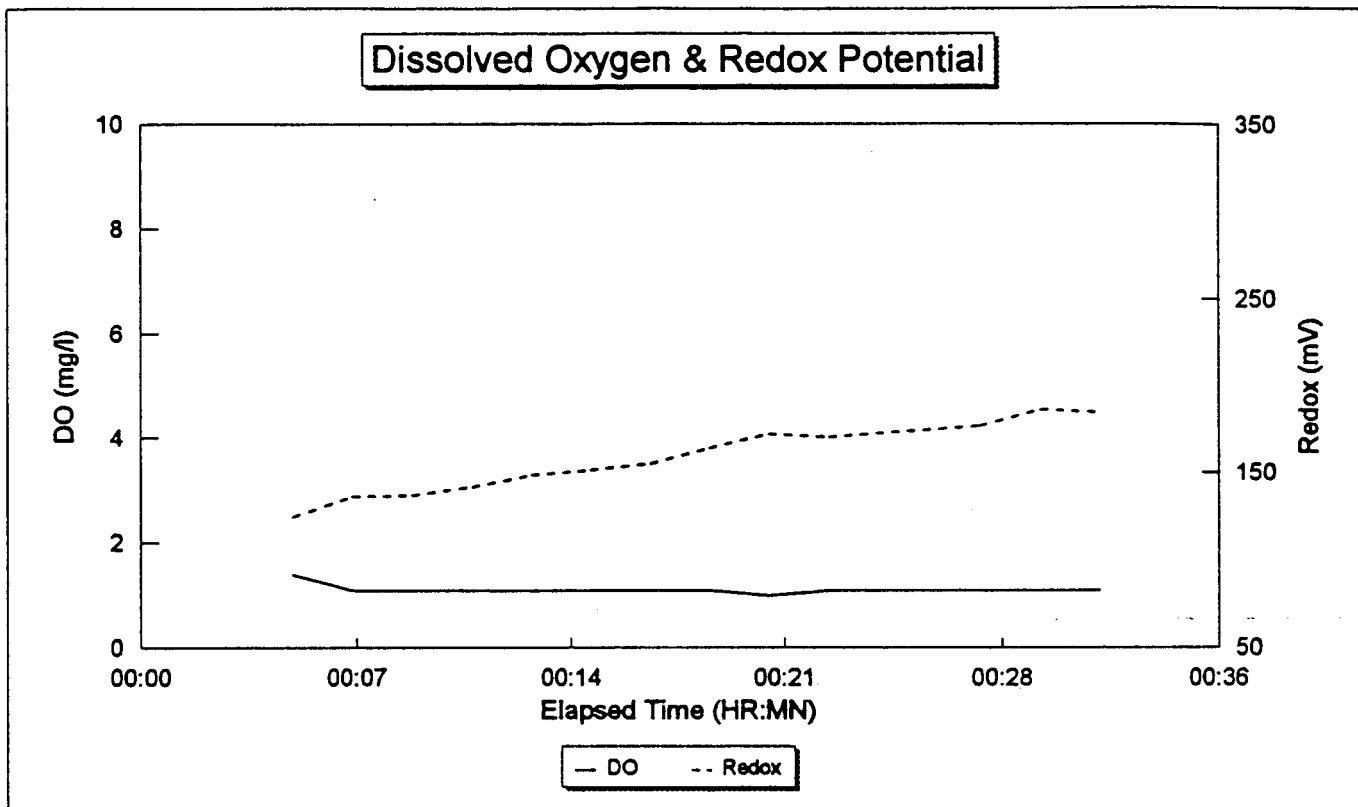
Field Parameter Data - Well 1786 - Test B
Pump: Marshalk Bladder Pump - Instrumentation: Solomat



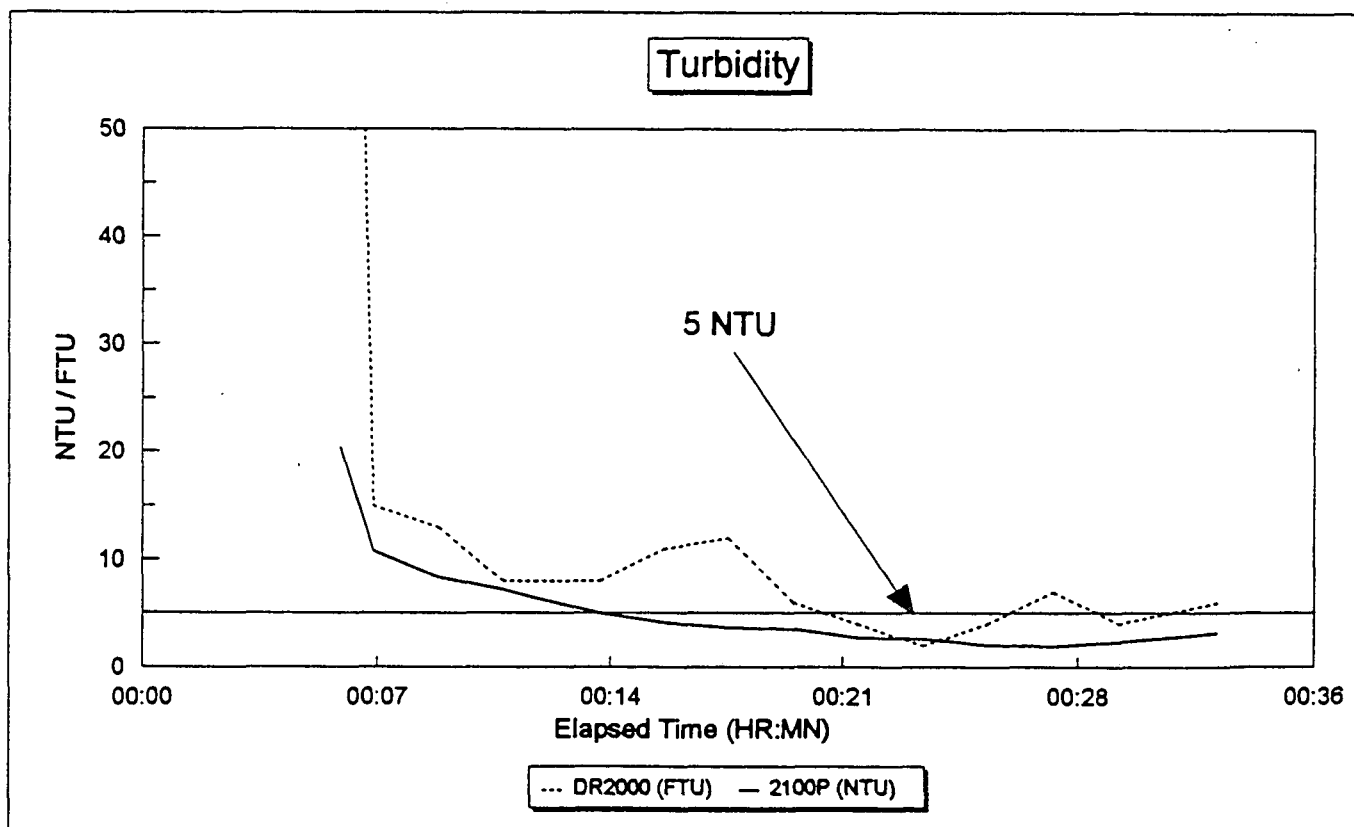
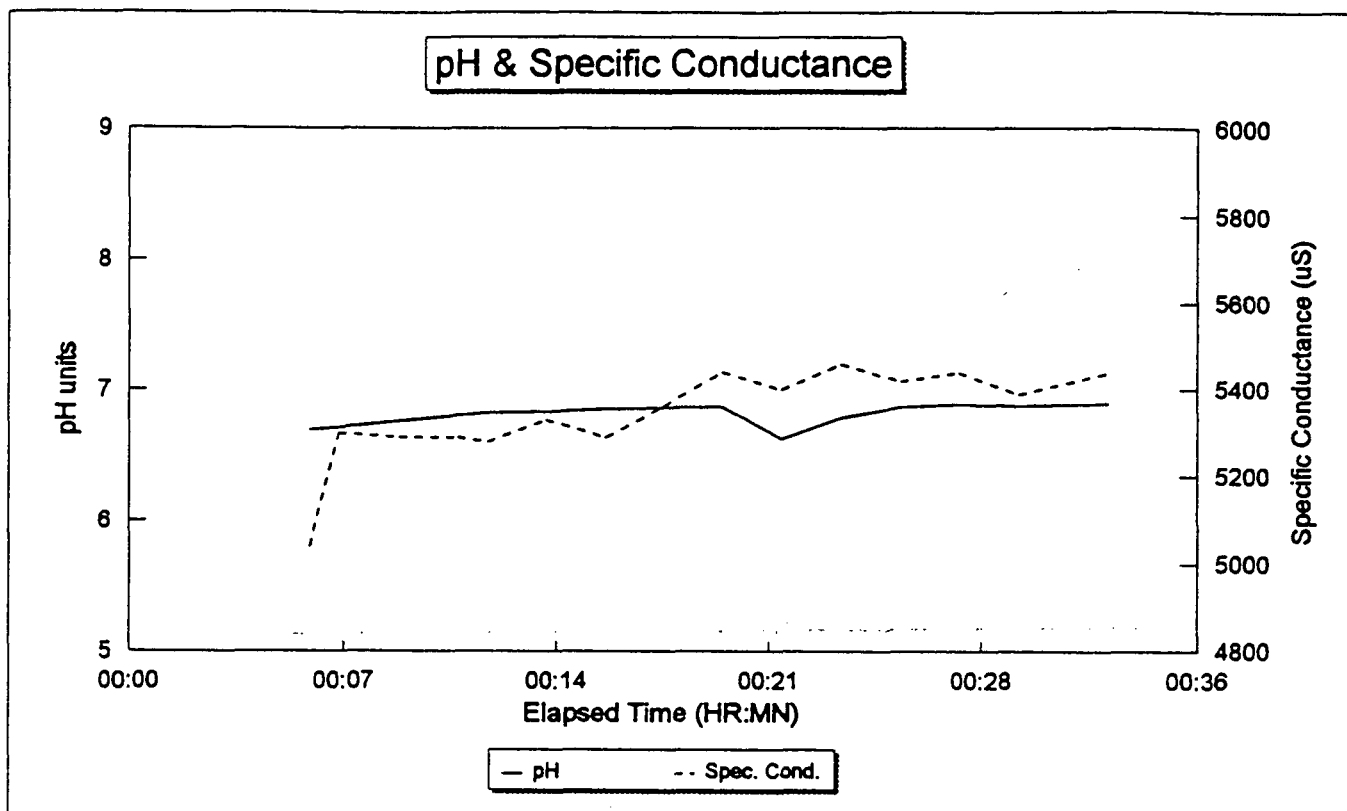
Field Parameter Data - Well 1786 - Test C
Pump: Grundfos - Instrumentation: Orion / Geotech Flowcell



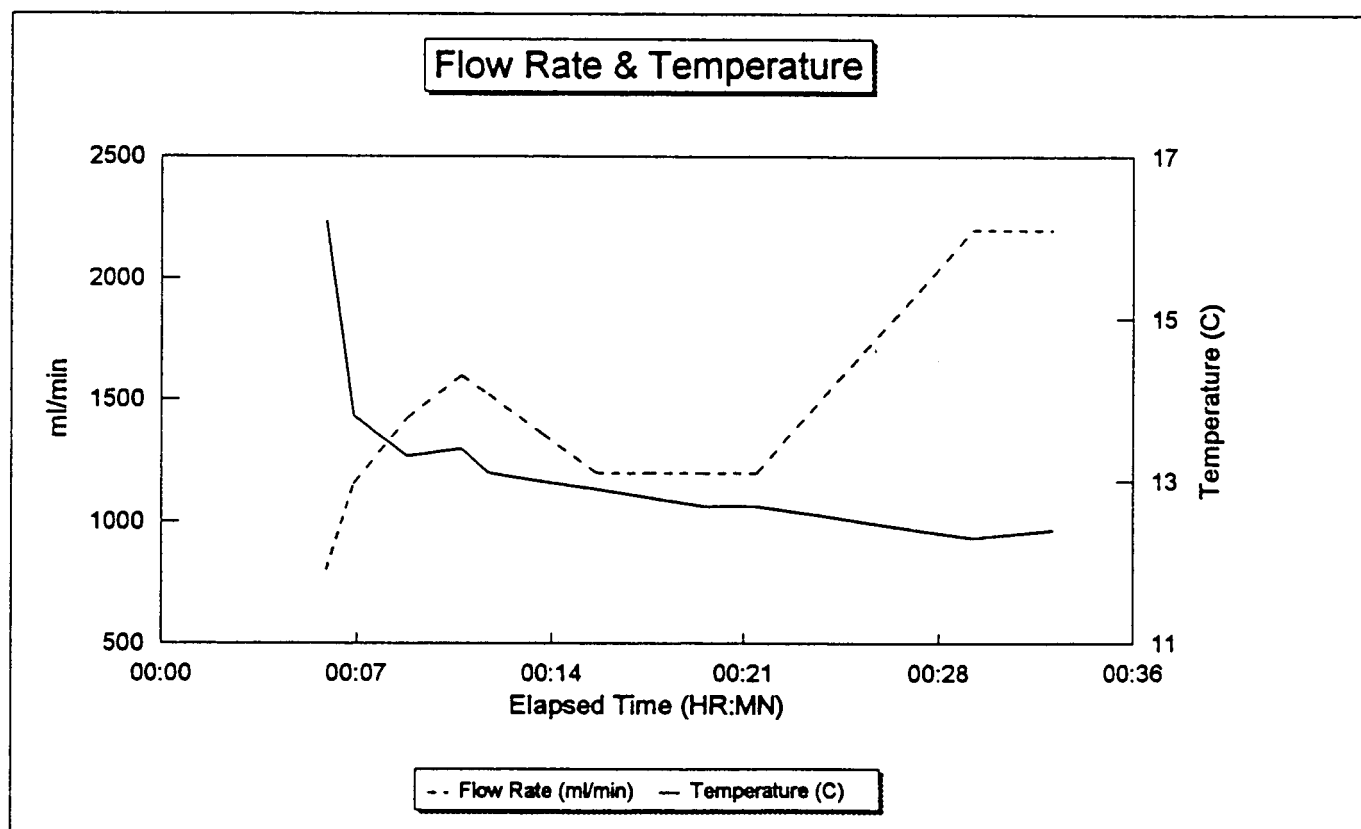
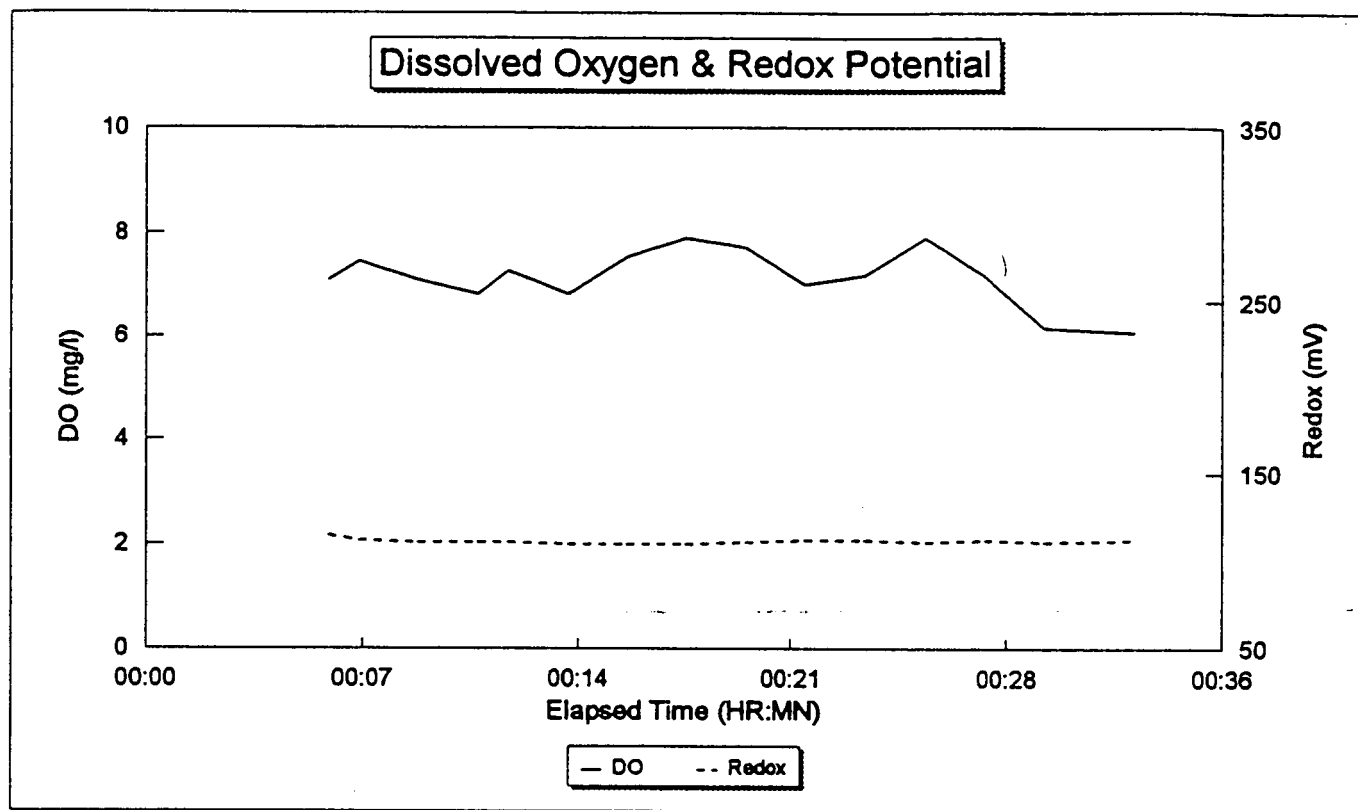
Field Parameter Data - Well 1786 - Test C
Pump: Grundfos - Instrumentation: Orion / Geotech Flowcell



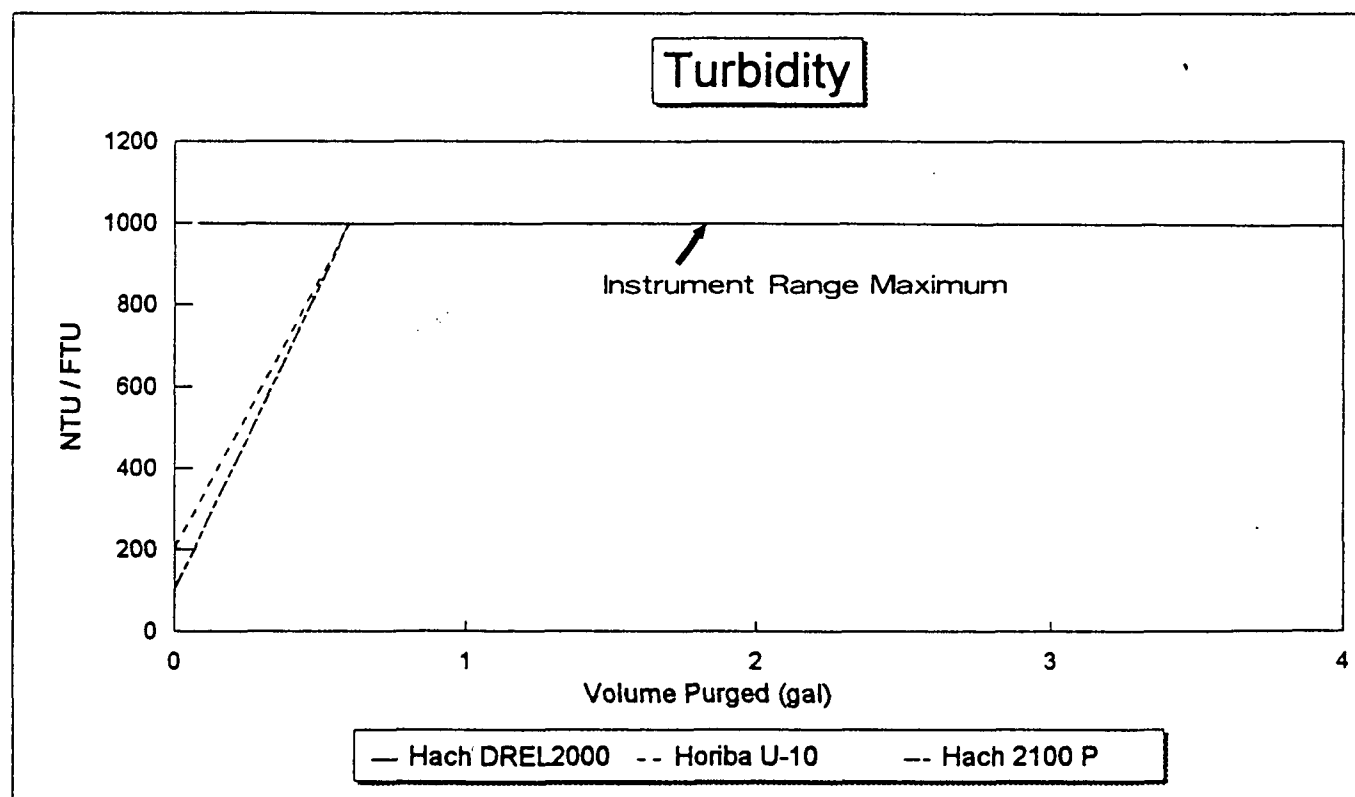
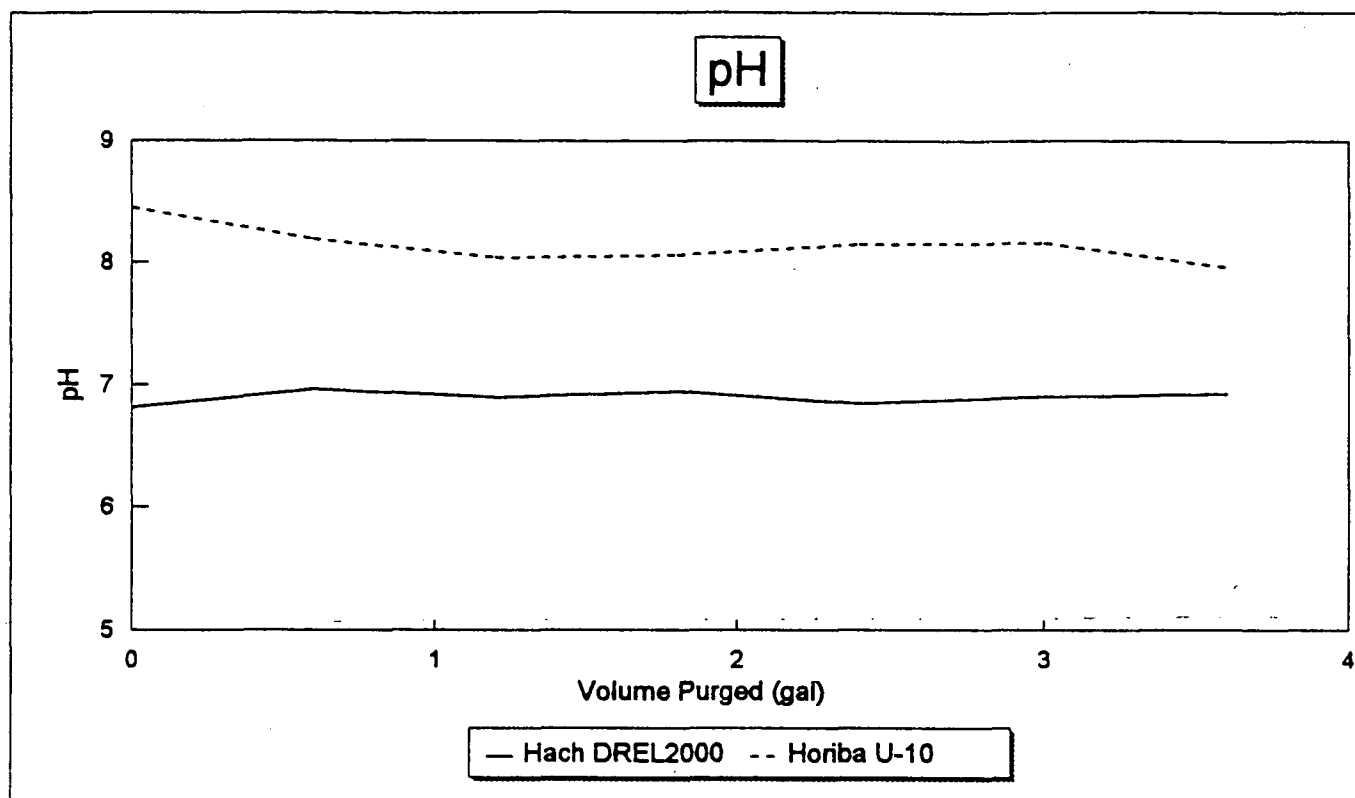
Field Parameter Data - Well 1786 - Test D
Pump: QED Well Wizard - Instrumentation: QED Purge-Saver



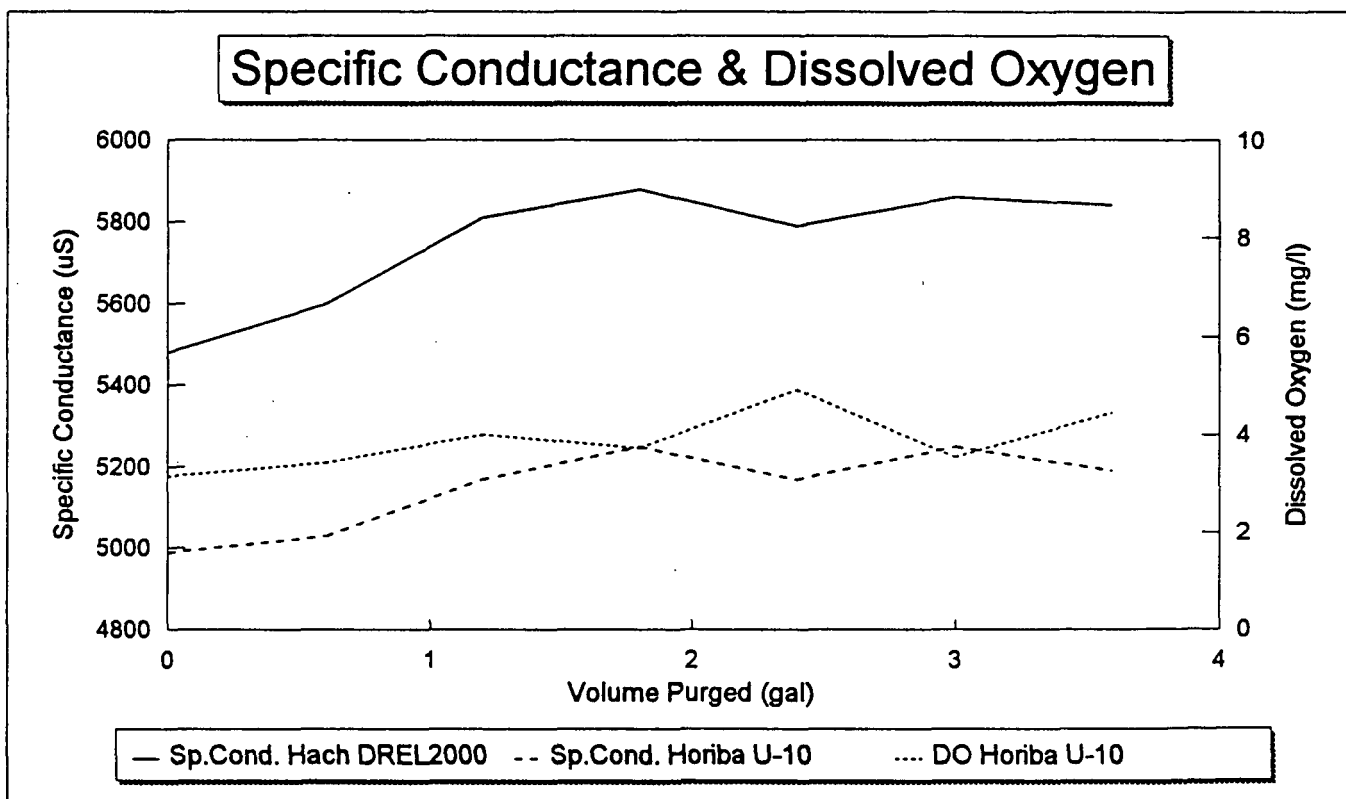
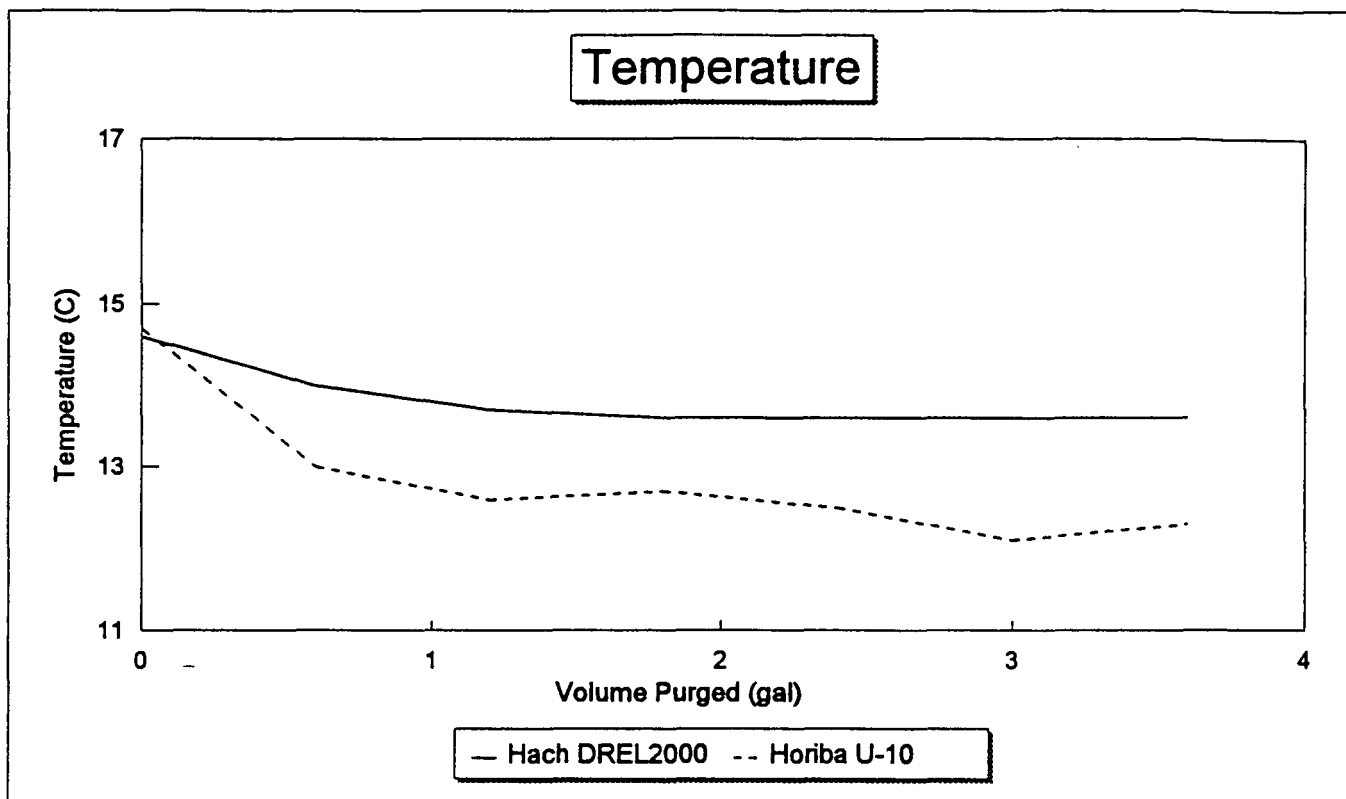
Field Parameter Data - Well 1786 - Test D
Pump: QED Well Wizard - Instrumentation: QED Purge-Saver



Field Parameter Data - Well 1786 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

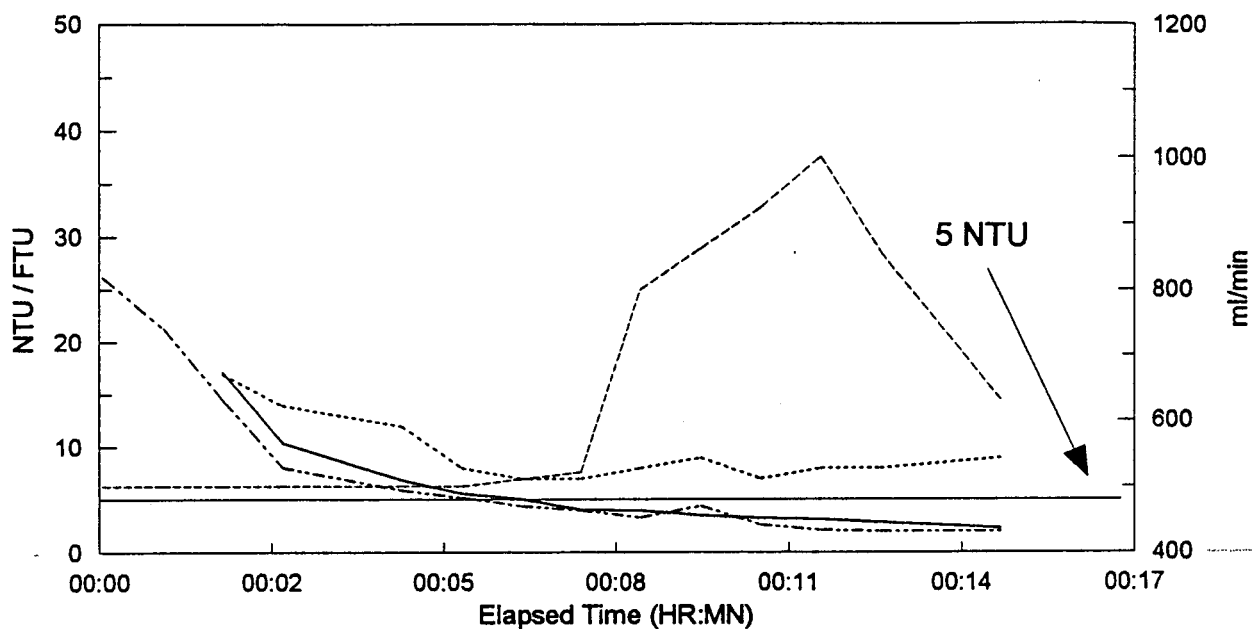


Field Parameter Data - Well 1786 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

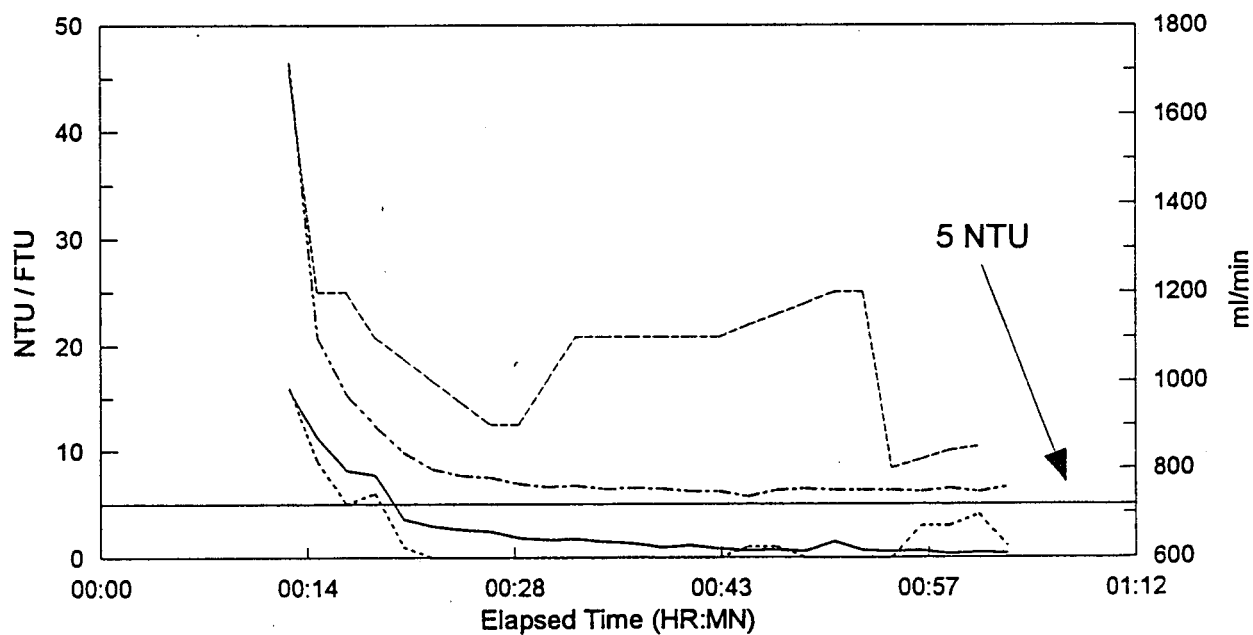


Flow vs Turbidity - Well 1786

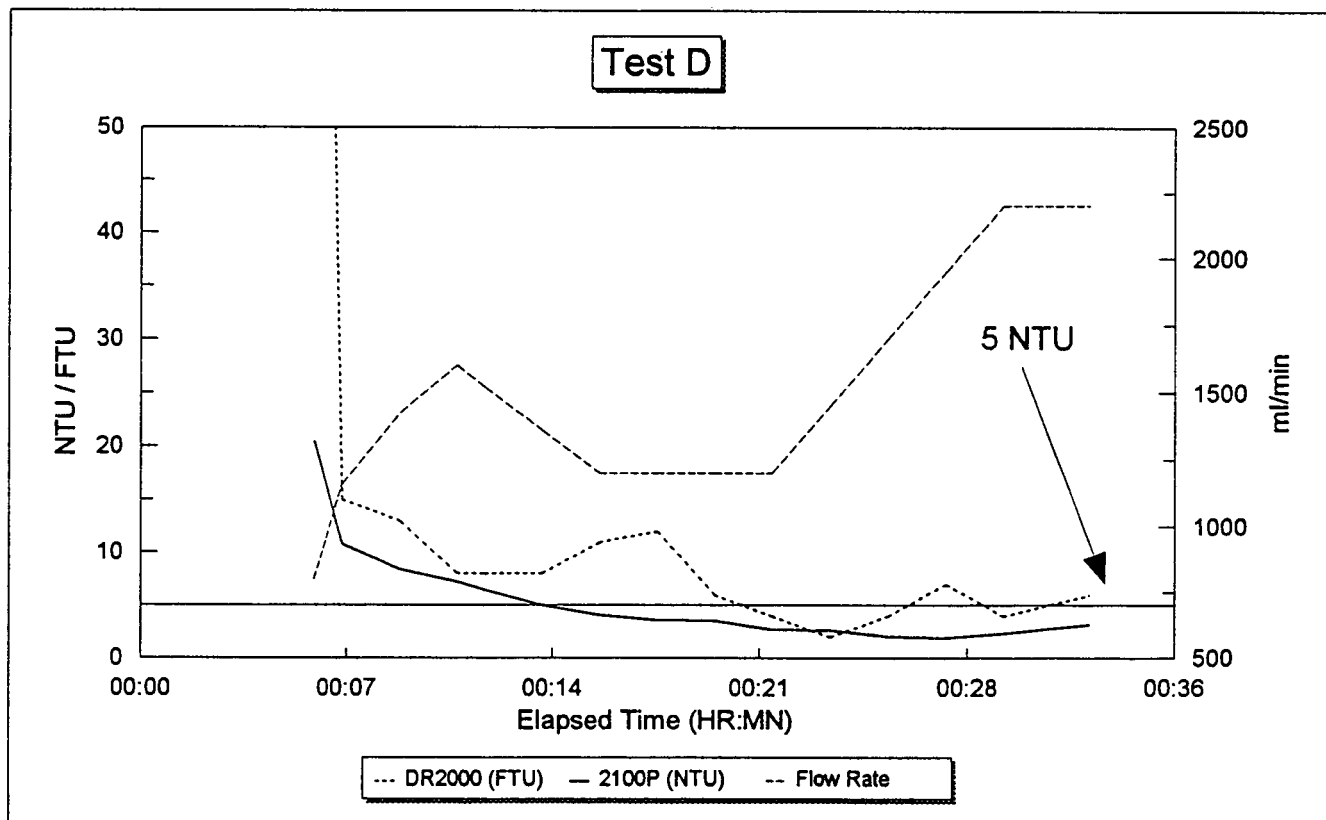
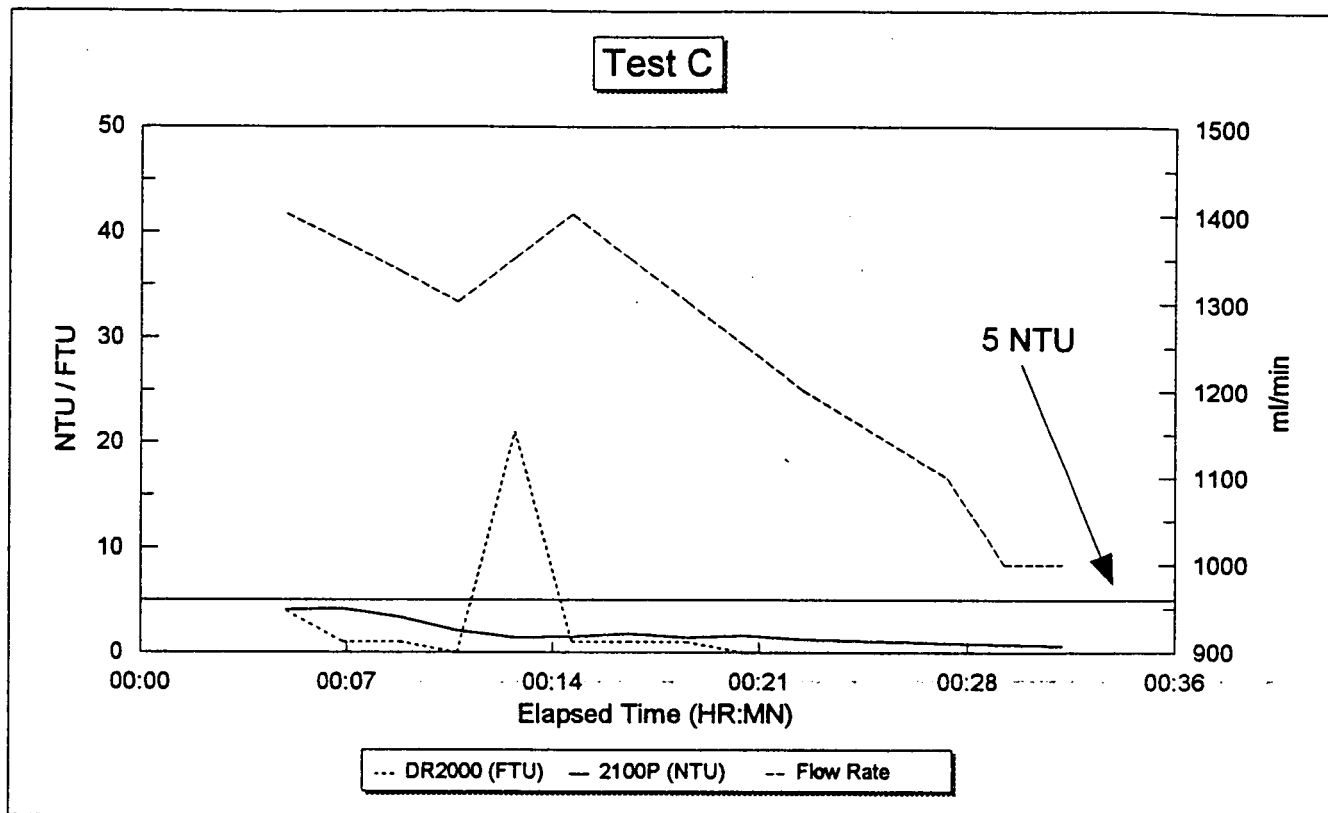
Test A



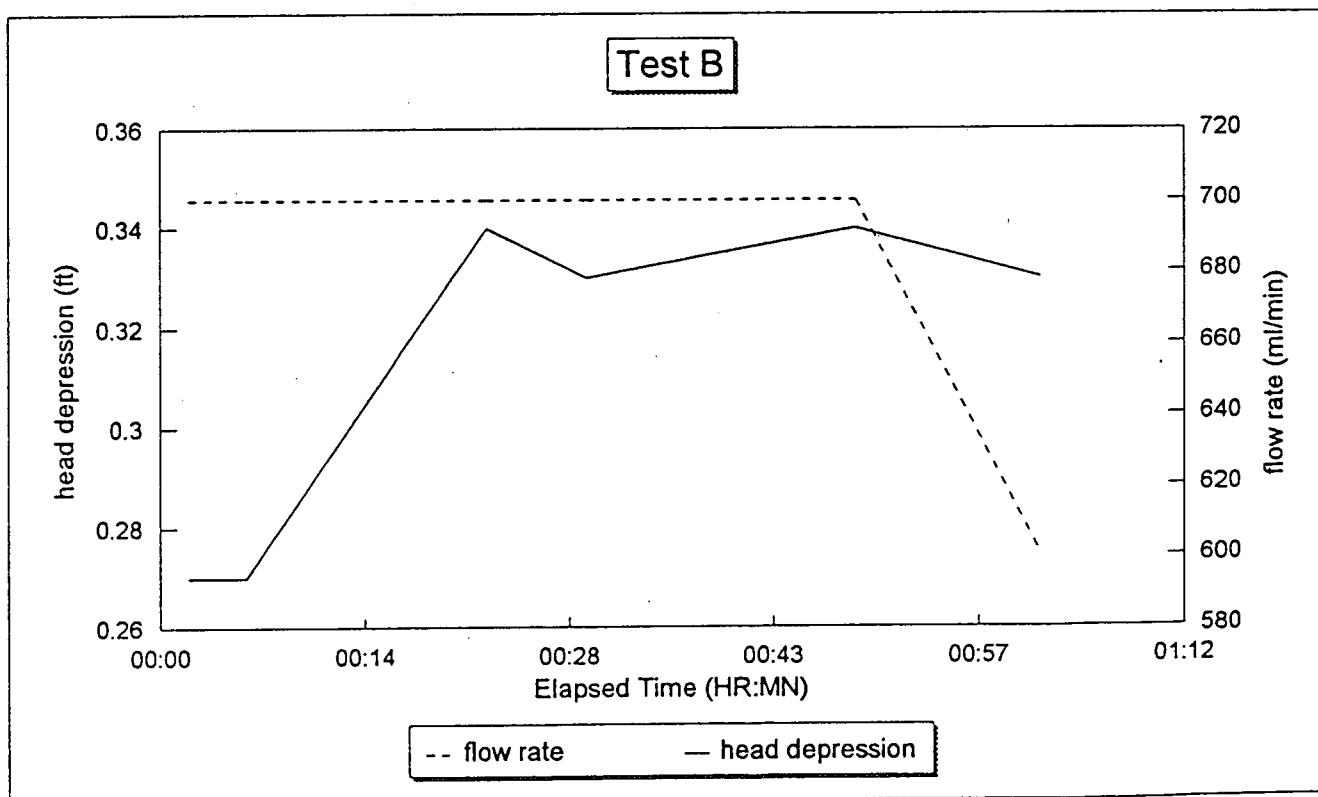
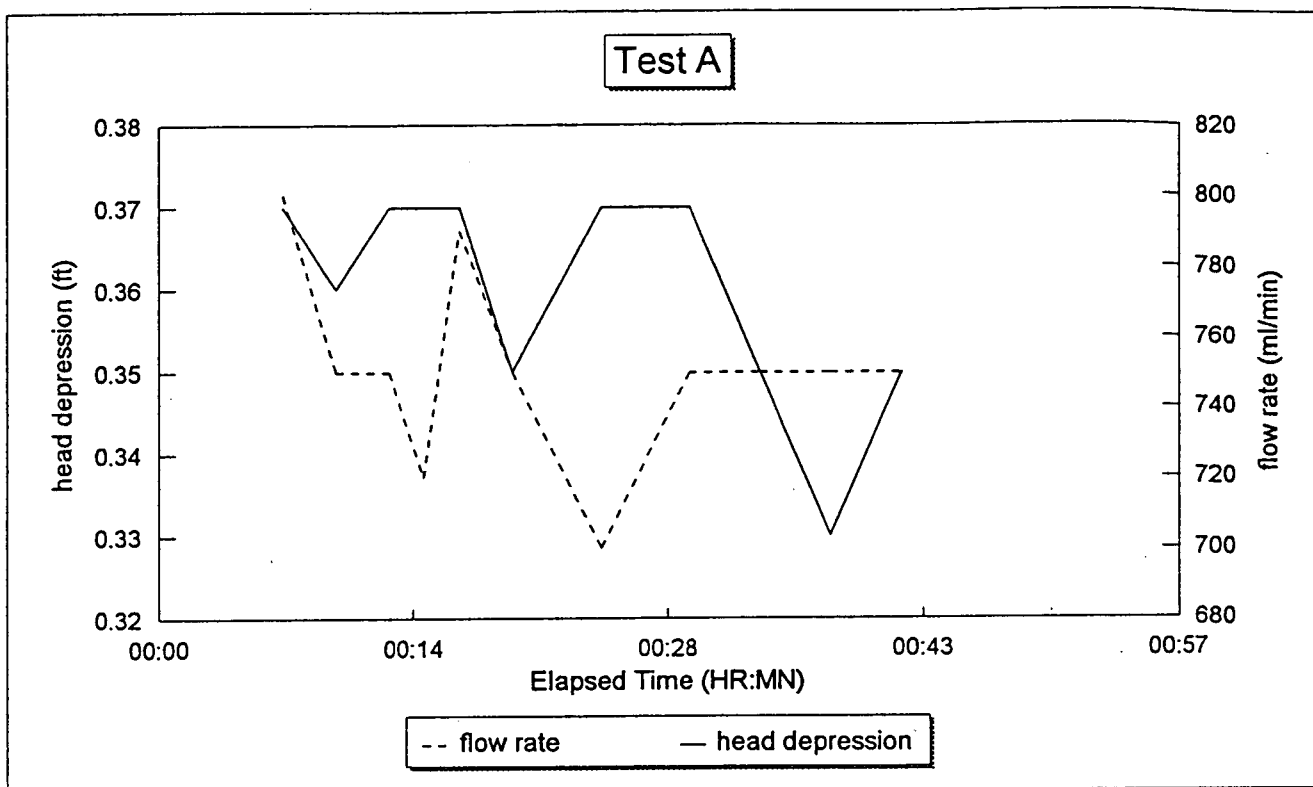
Test B



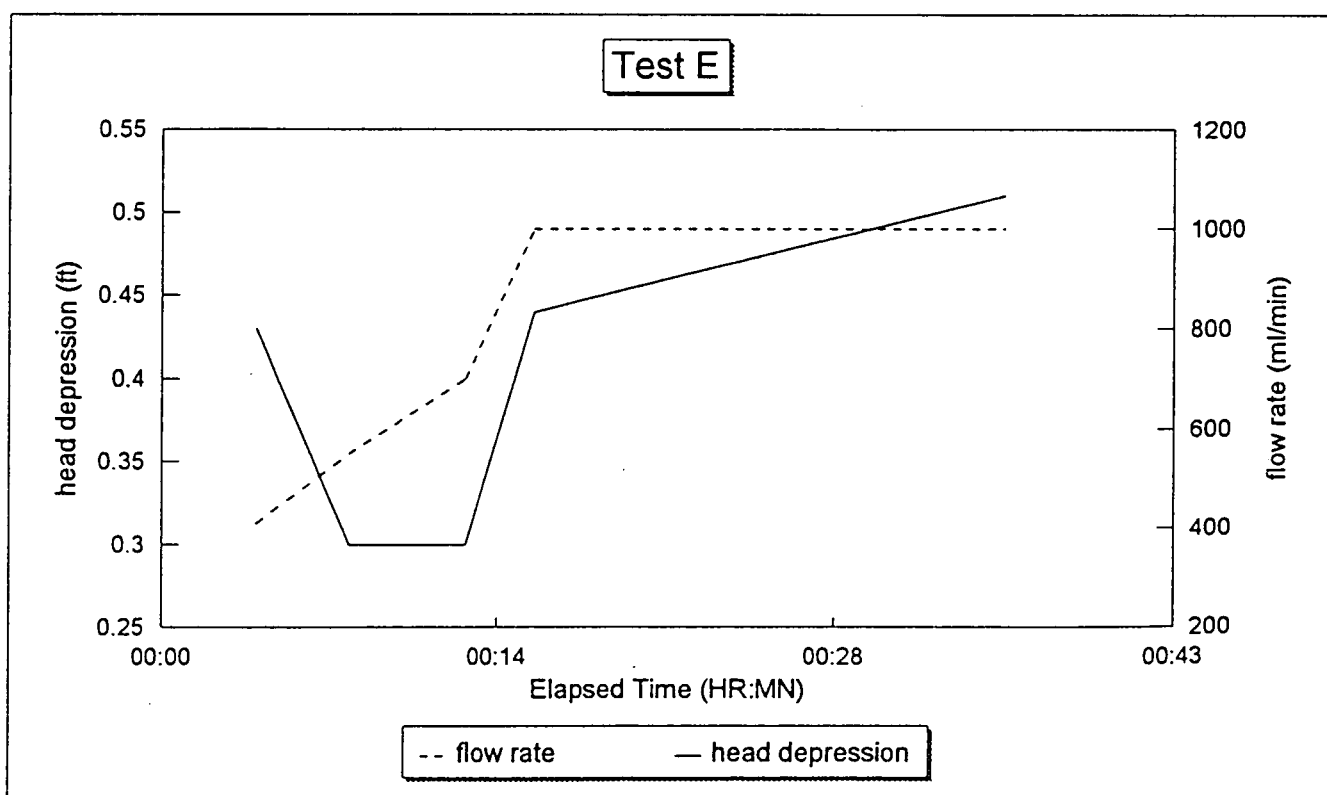
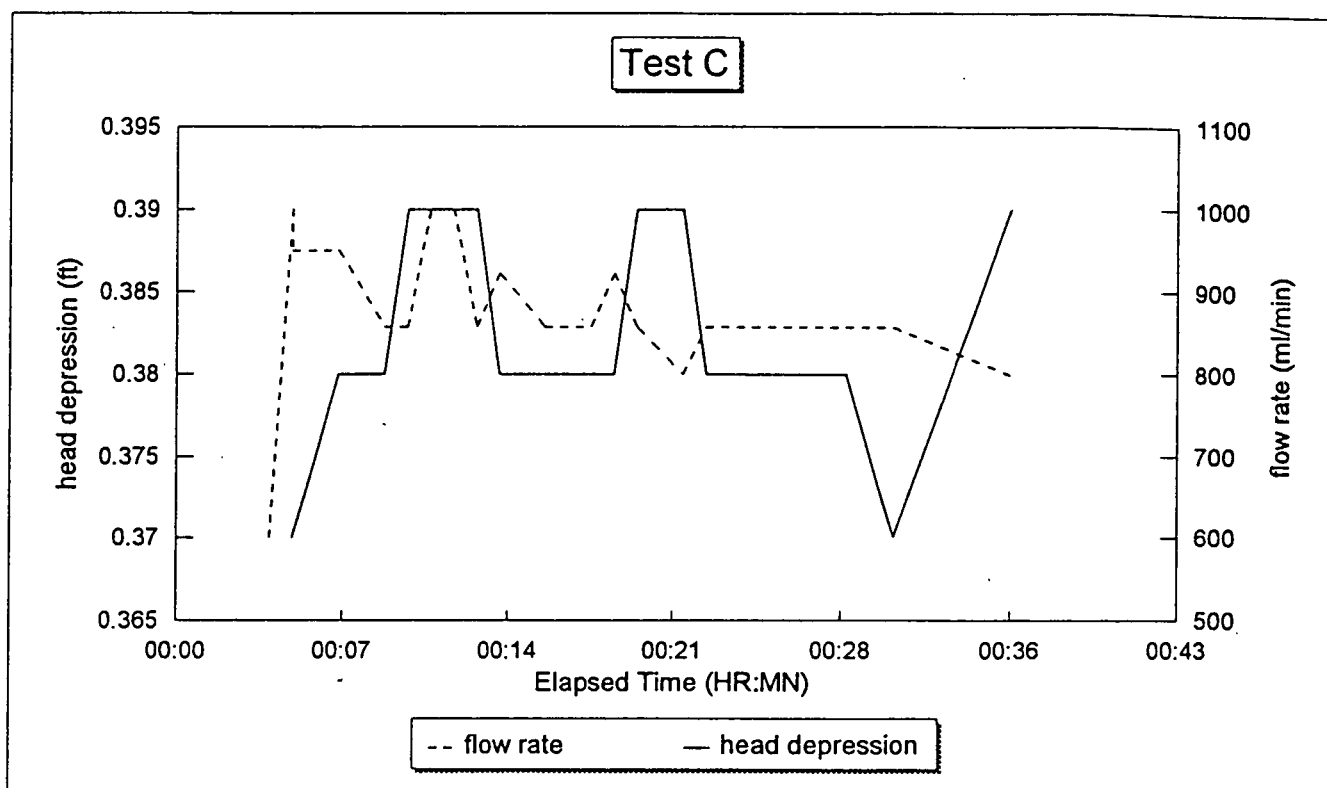
Flow vs Turbidity - Well 1786



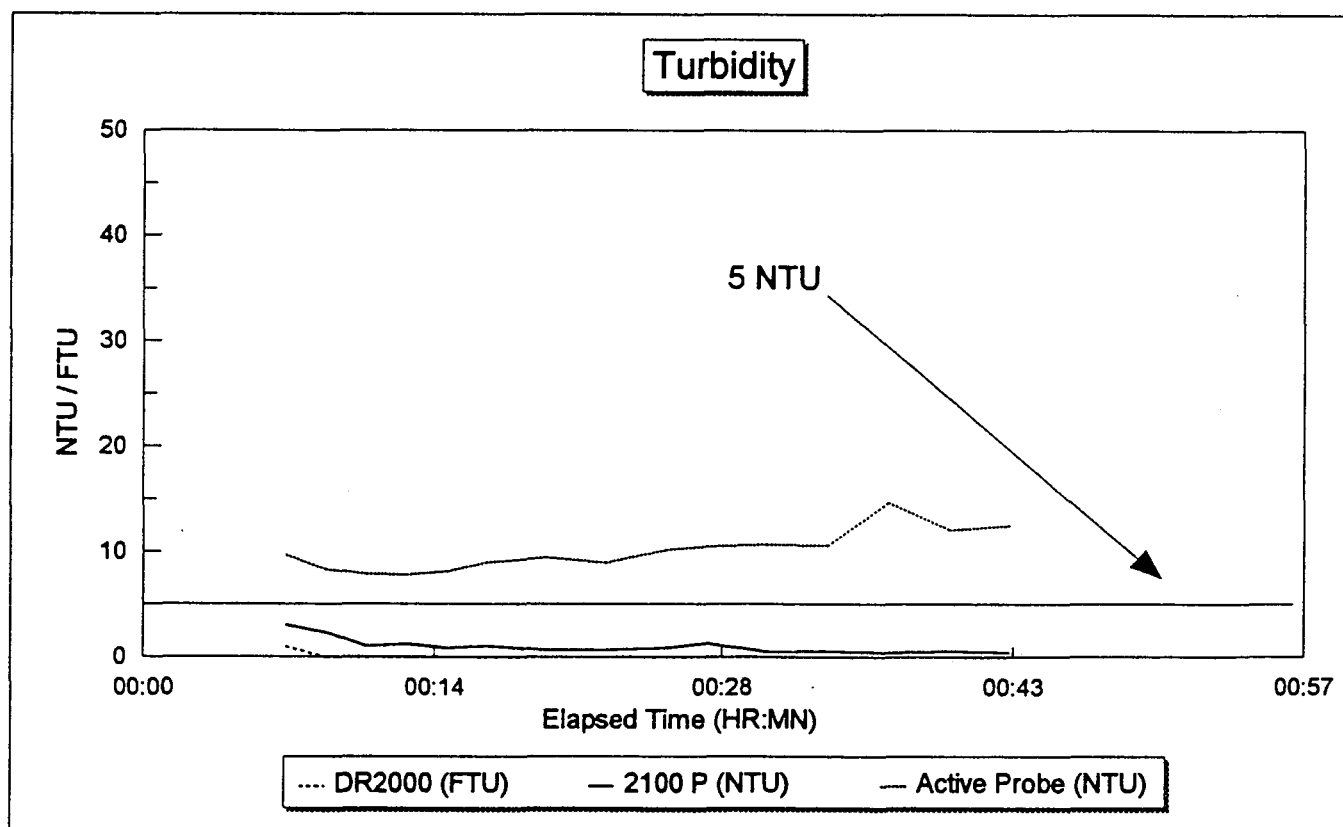
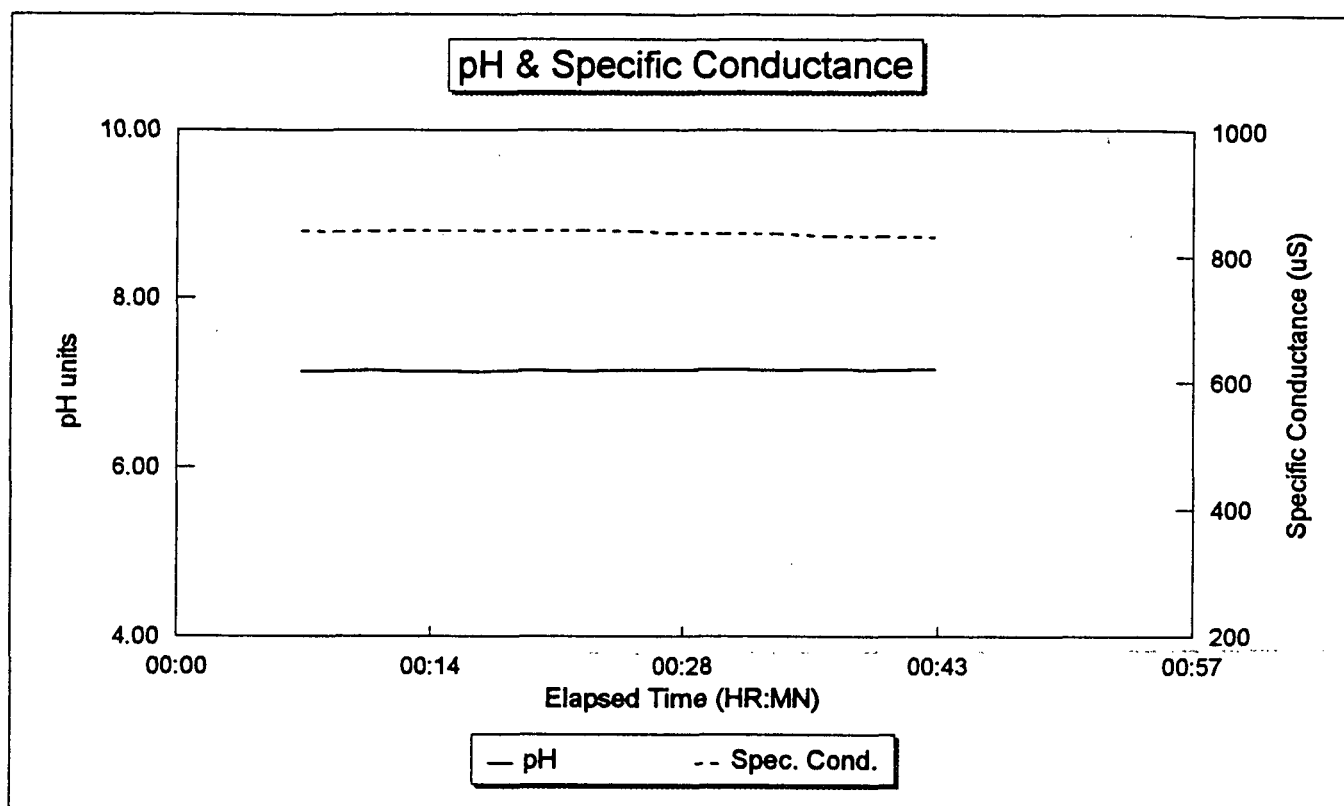
Head Depression vs Flow Rate - Well 2587



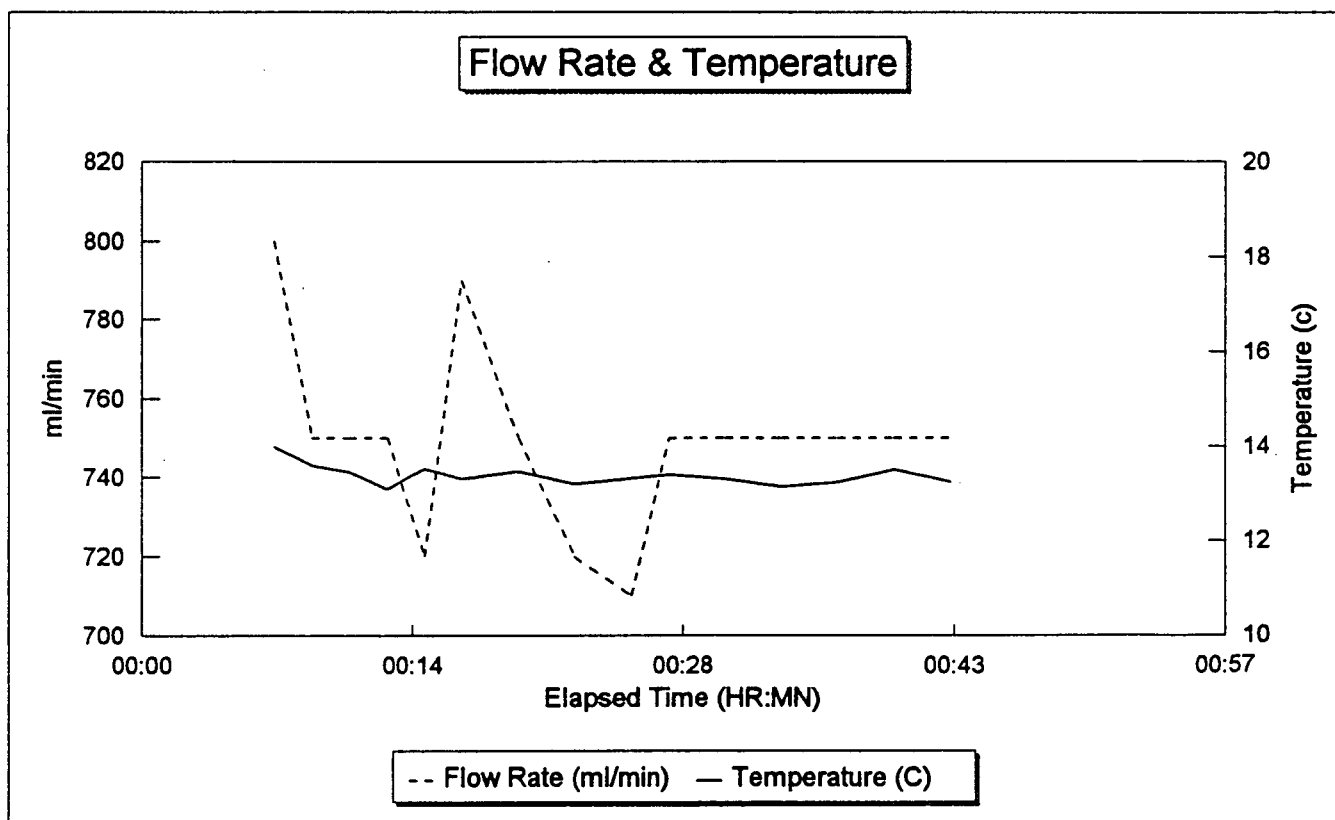
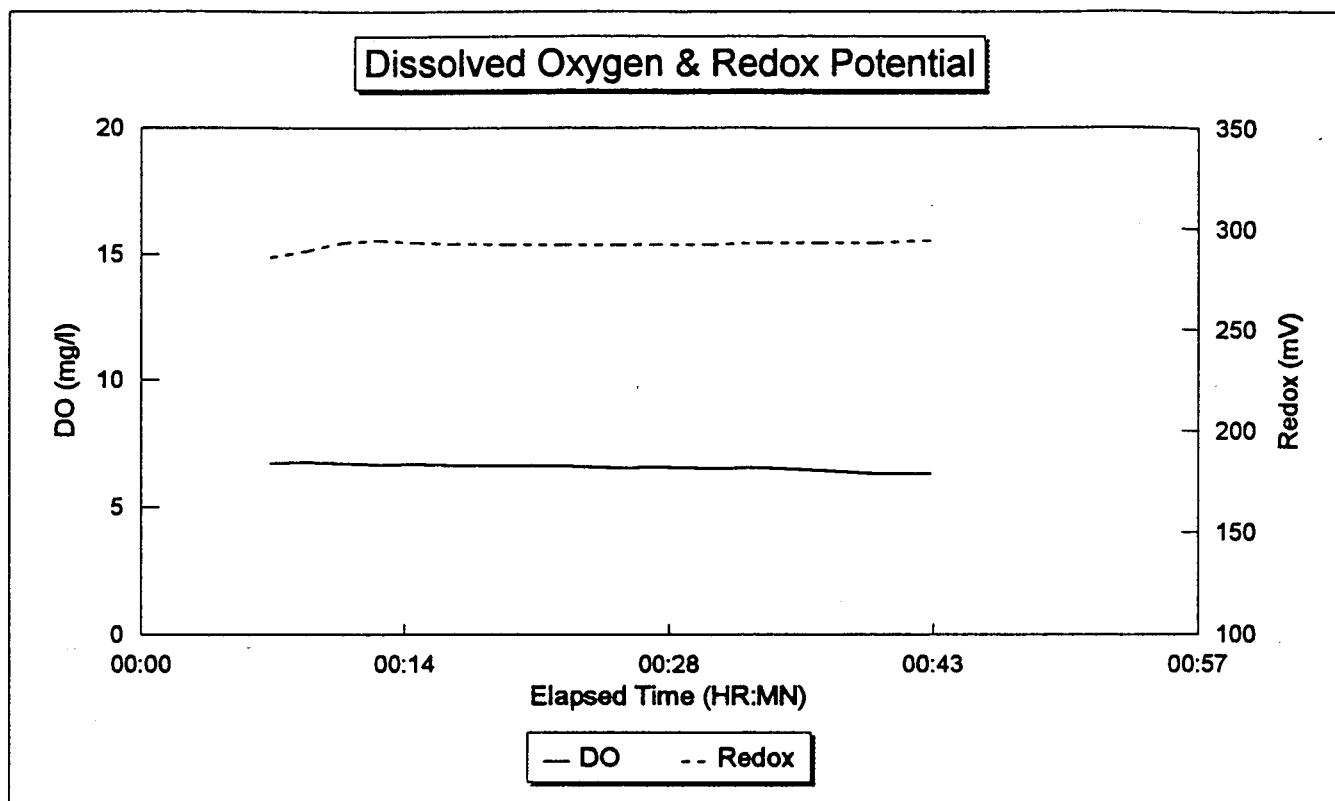
Head Depression vs Flow Rate - Well 2587



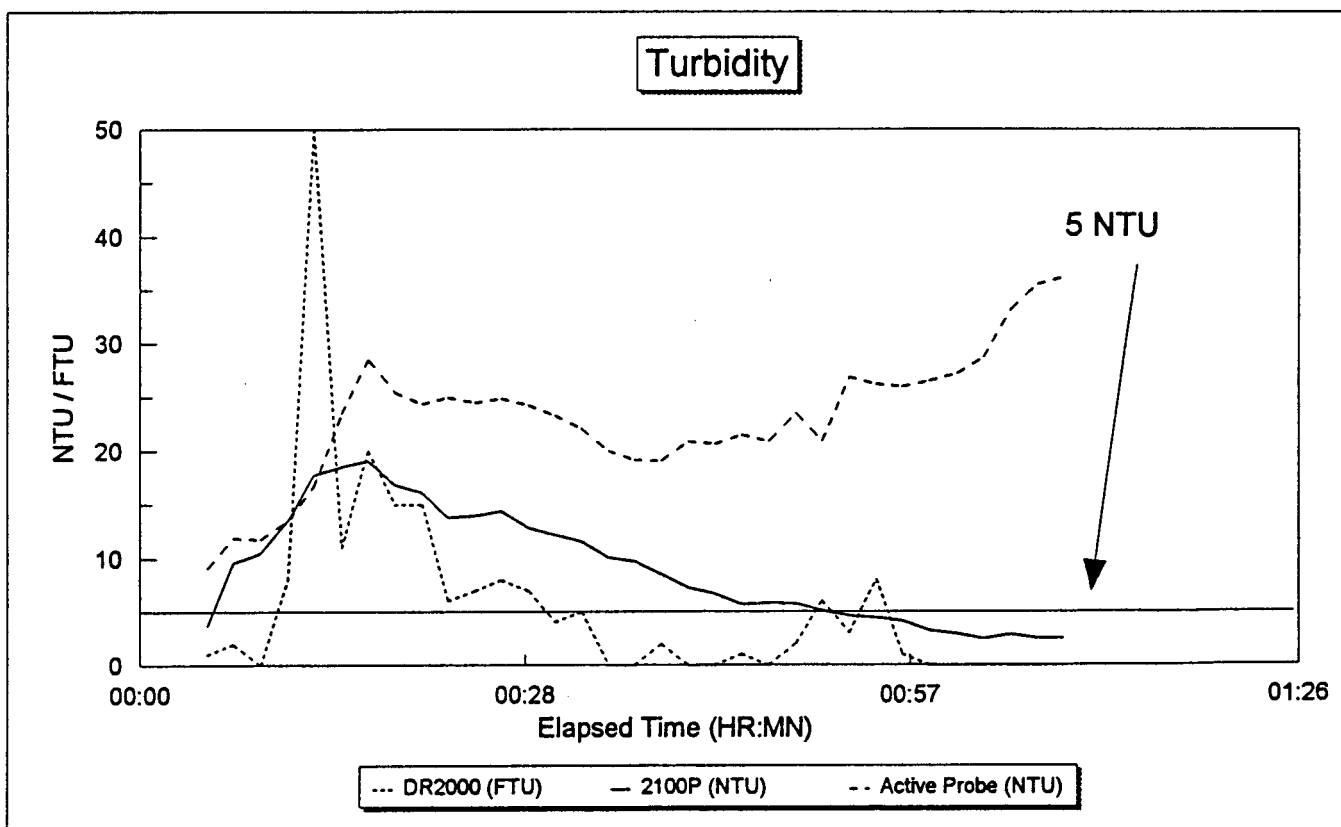
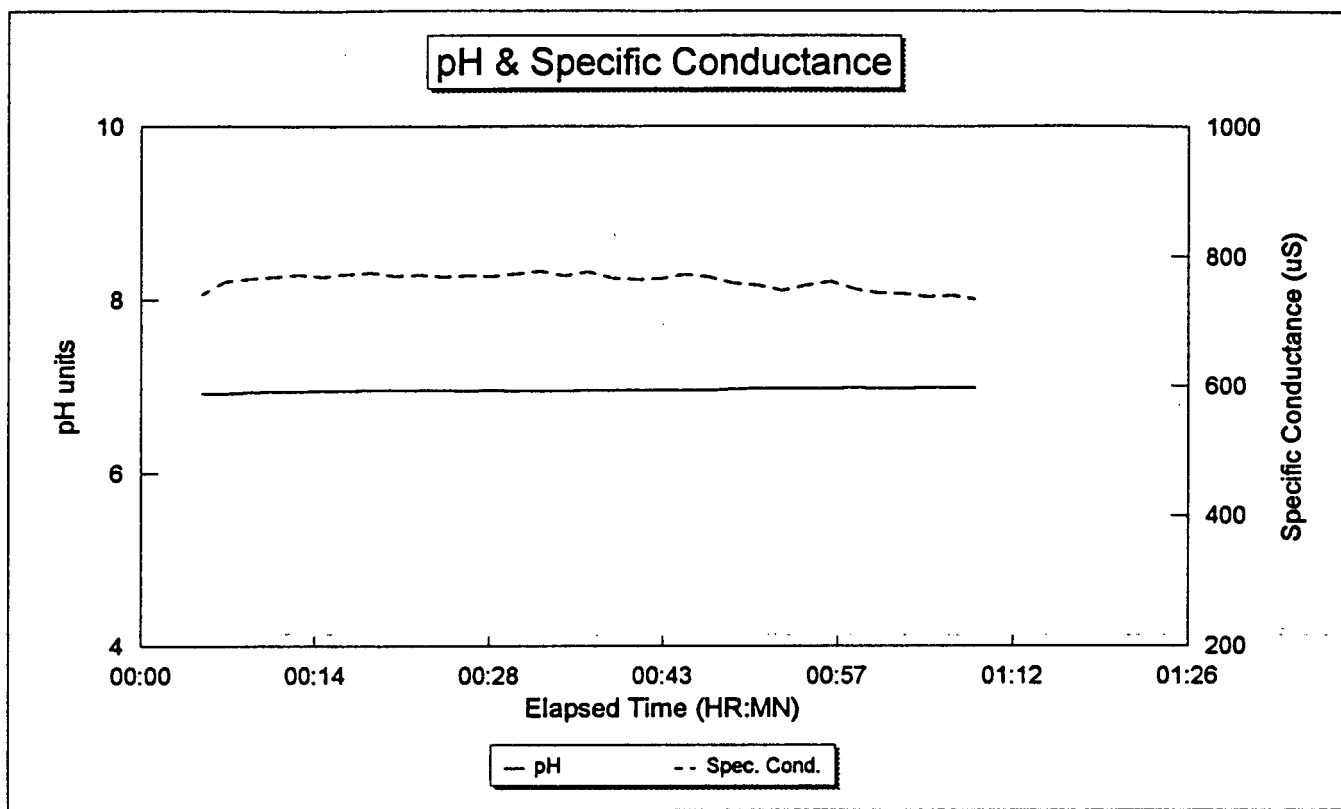
Field Parameter Data - Well 2587 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20



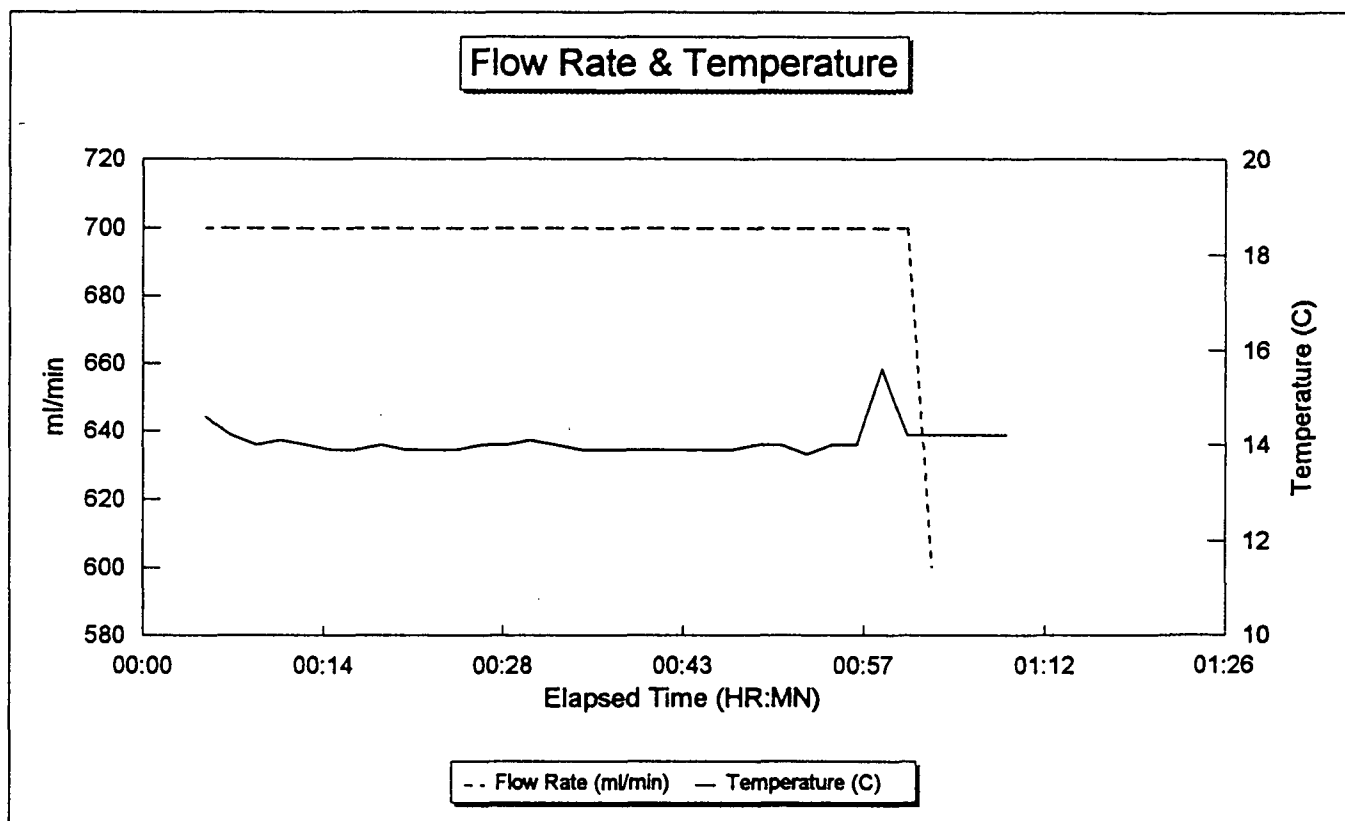
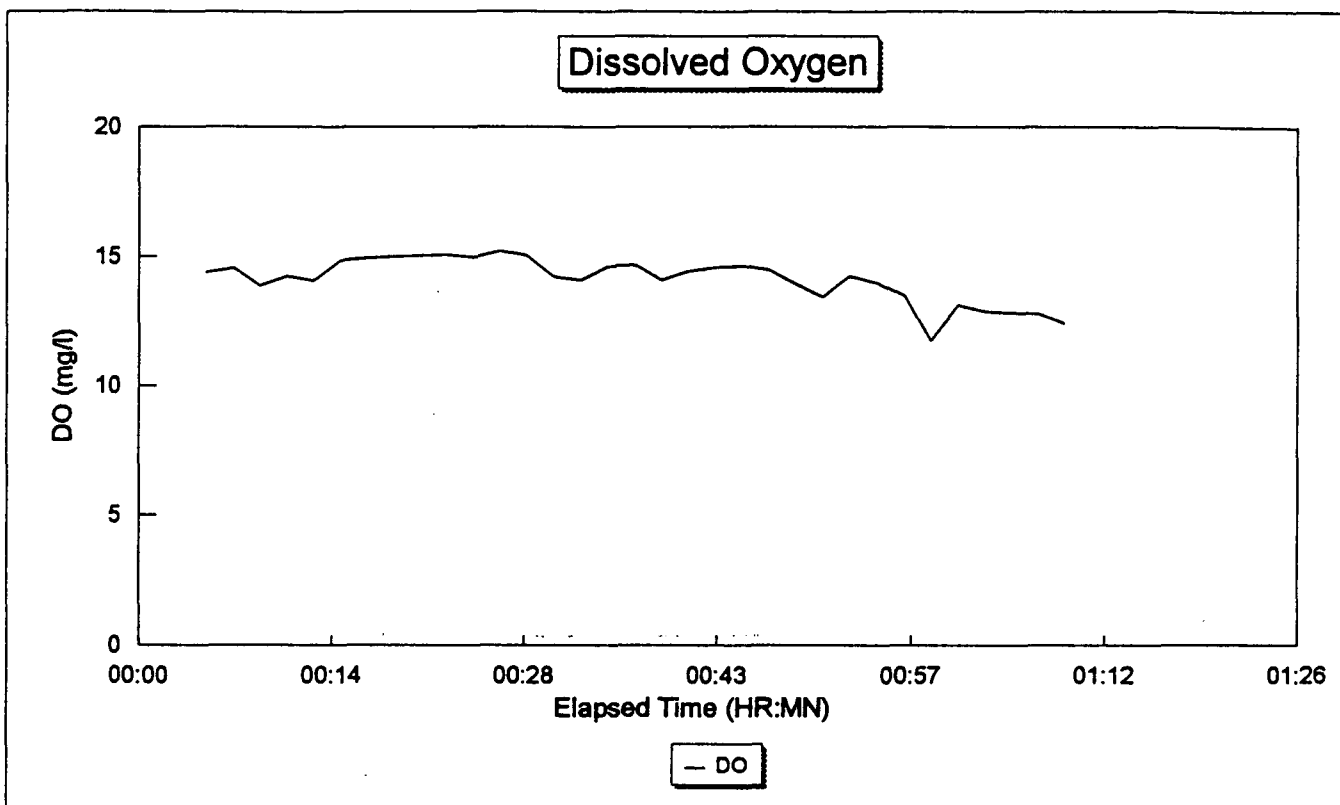
Field Parameter Data - Well 2587 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20



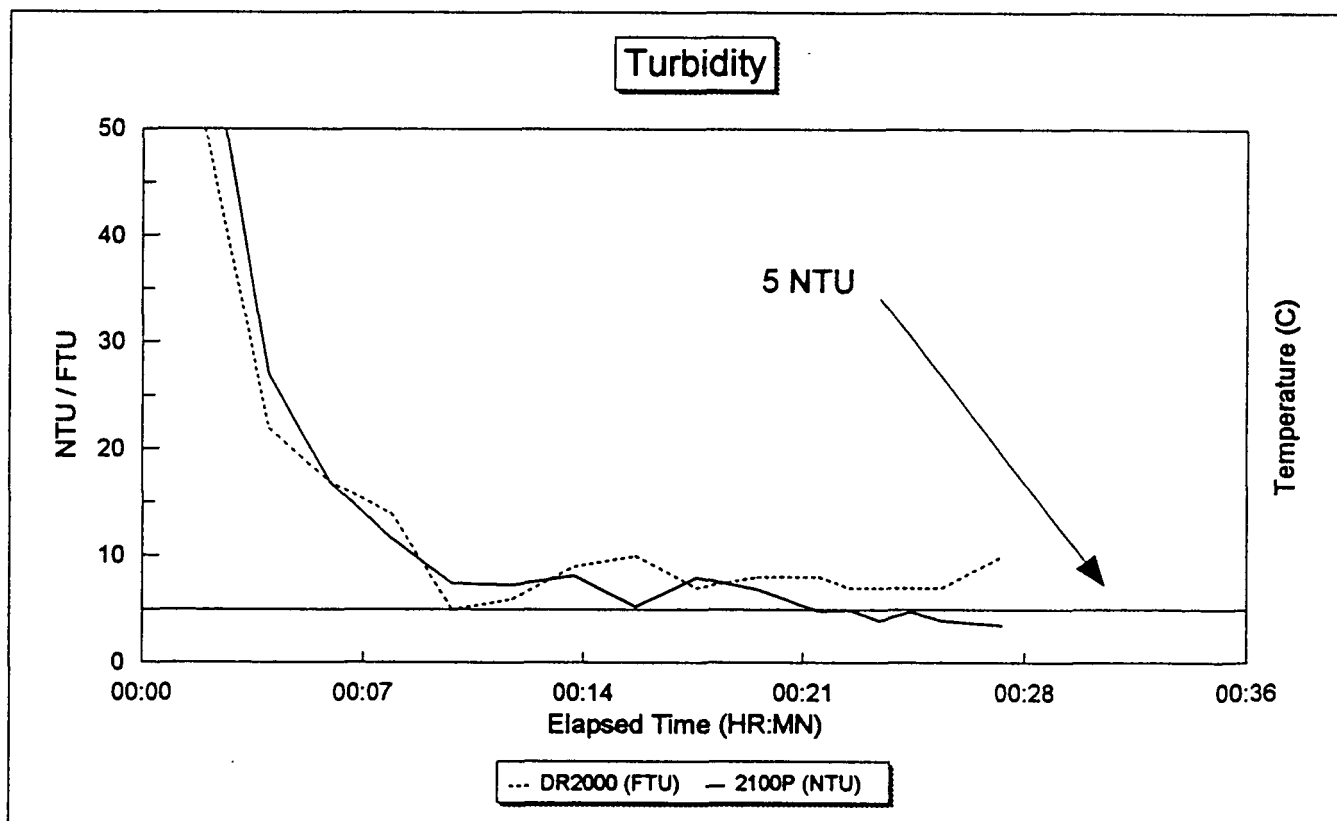
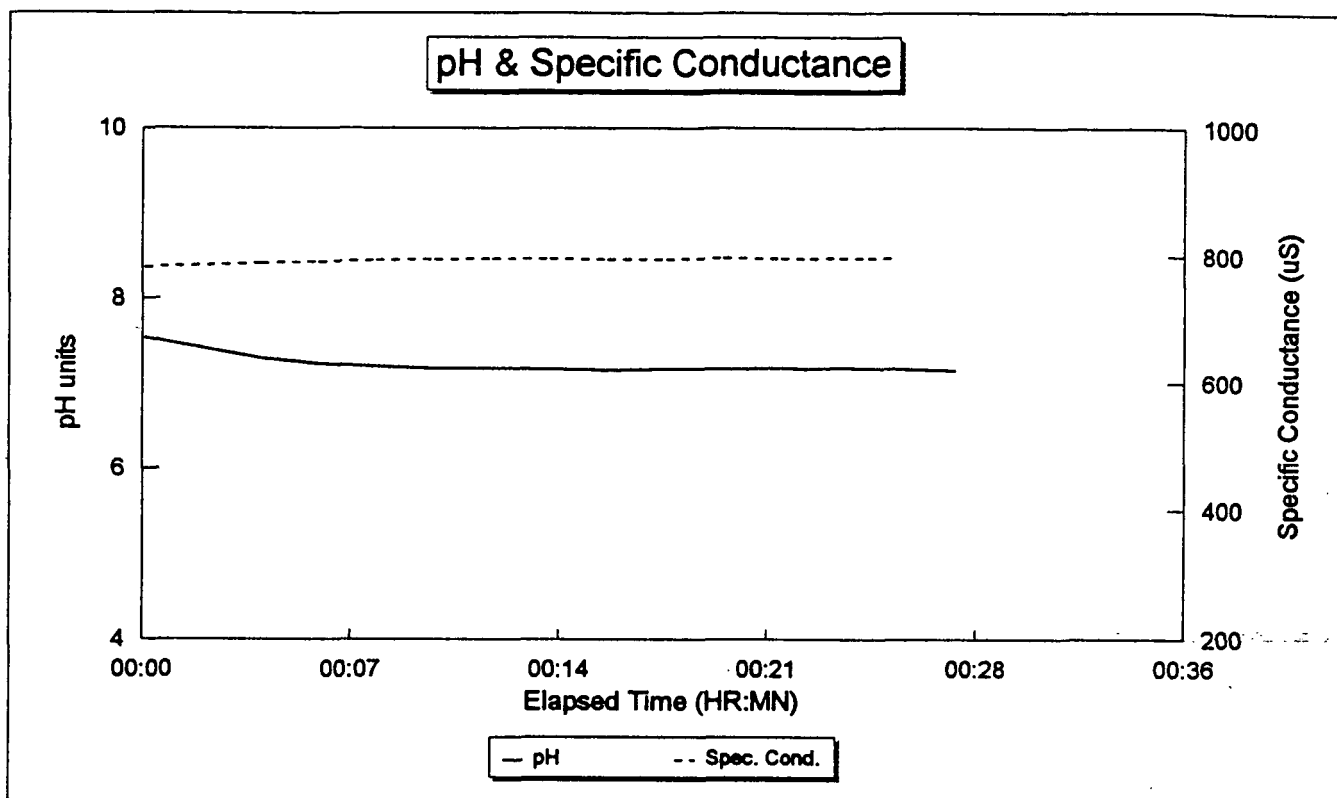
Field Parameter Data - Well 2587 - Test B
Pump: Marshalk Bladder Pump - Instrumentation: Solomat



Field Parameter Data - Well 2587 - Test B
Pump: Marshalk Bladder Pump - Instrumentation: Solomat

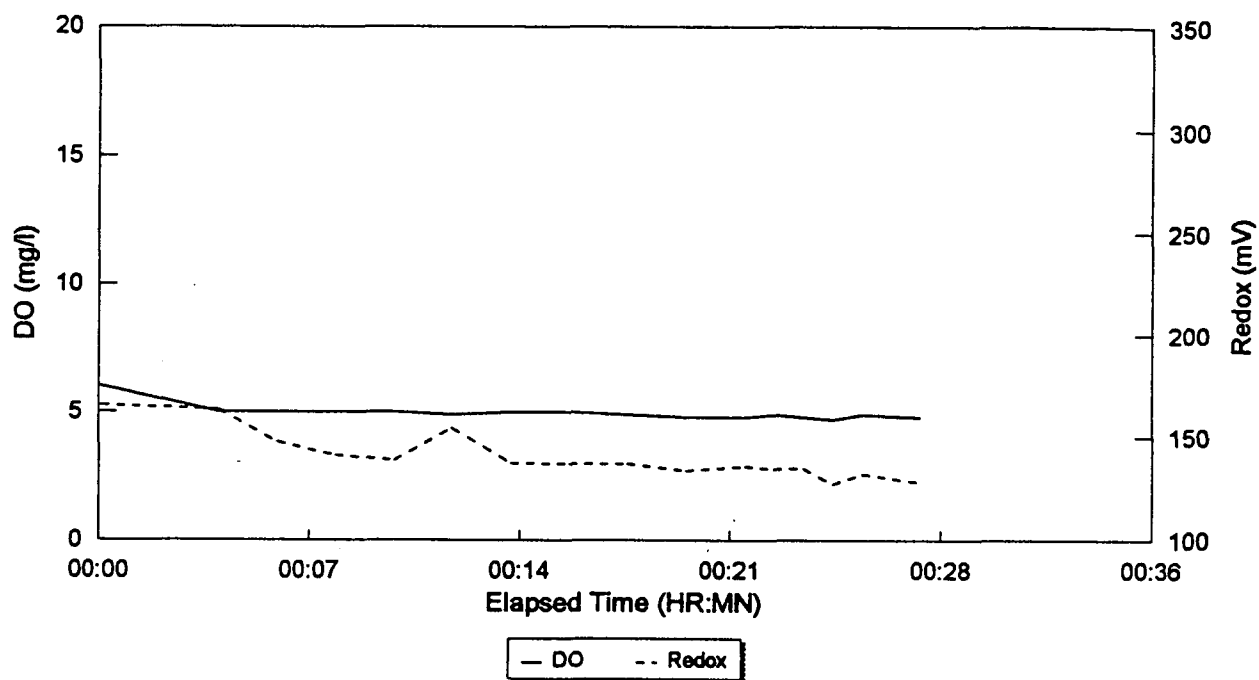


Field Parameter Data - Well 2587 - Test C
Pump: Grundfos - Instrumentation: Orion / Geotech Flowcell

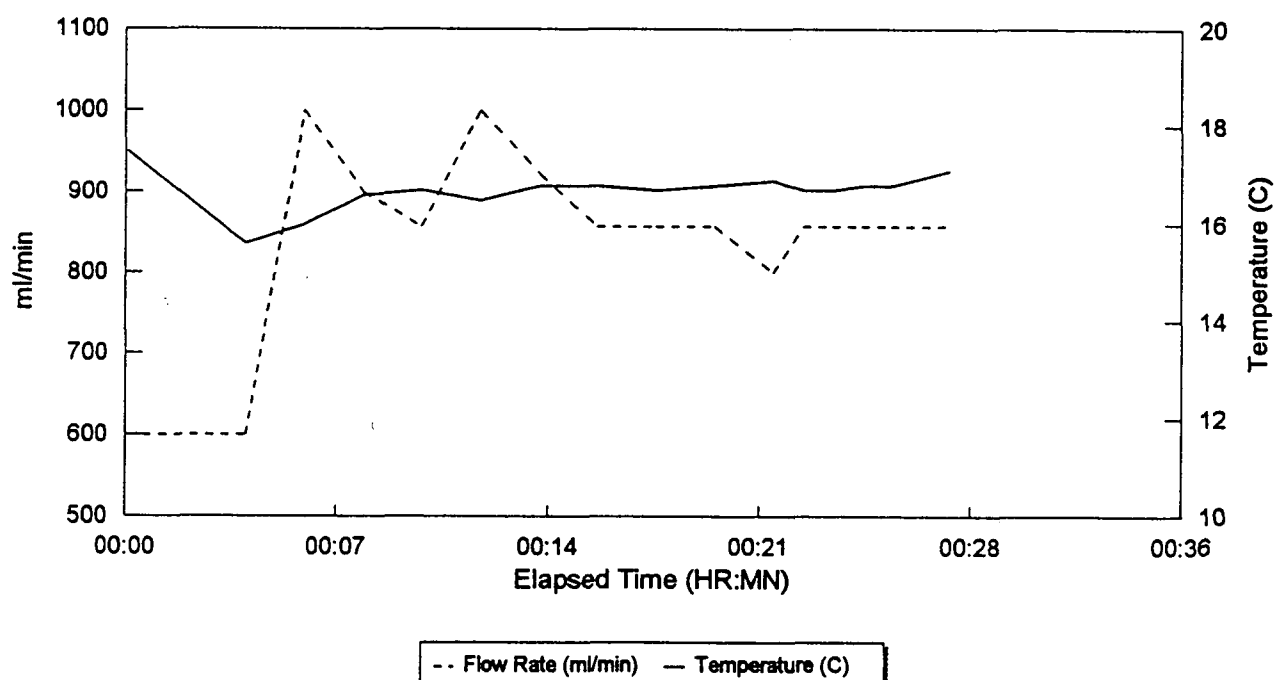


Field Parameter Data - Well 2587 - Test C
Pump: Grundfos - Instrumentation: Orion / Geotech Flowcell

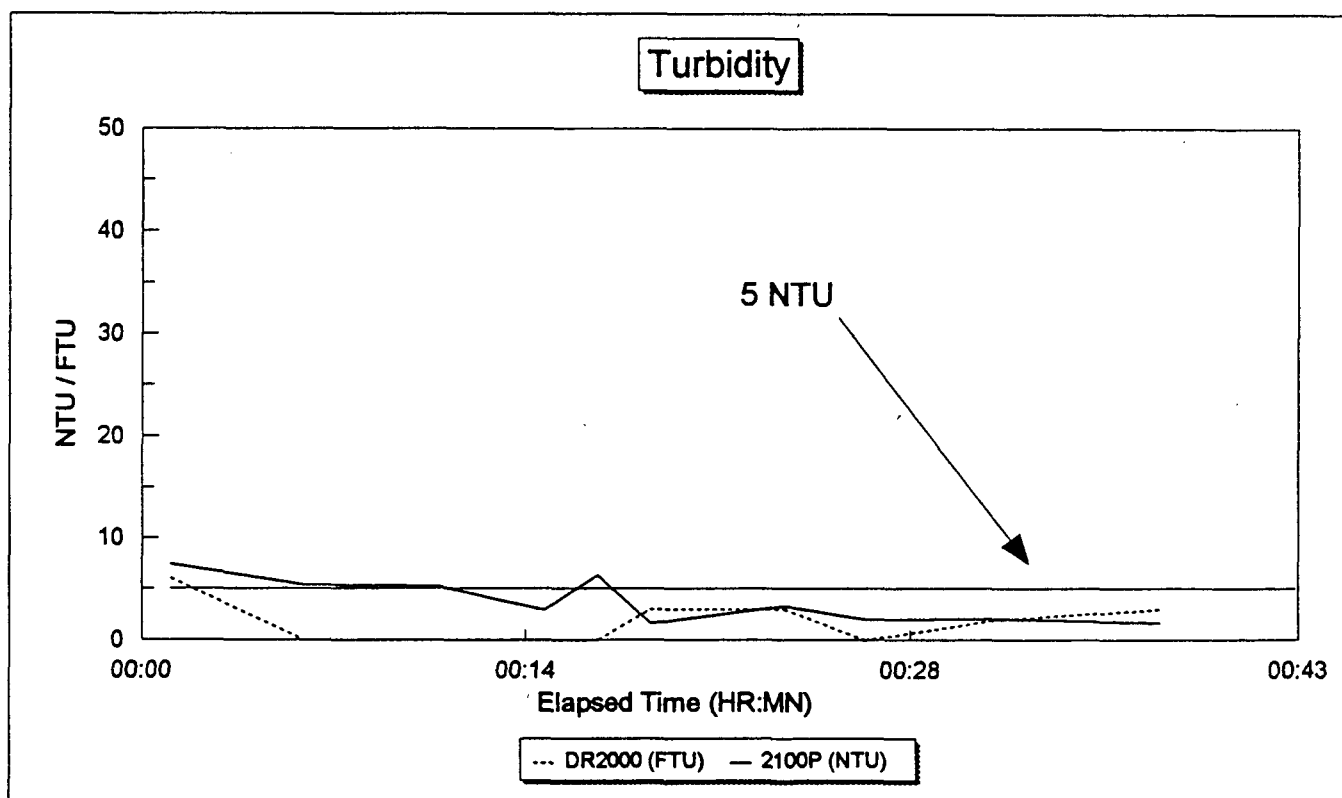
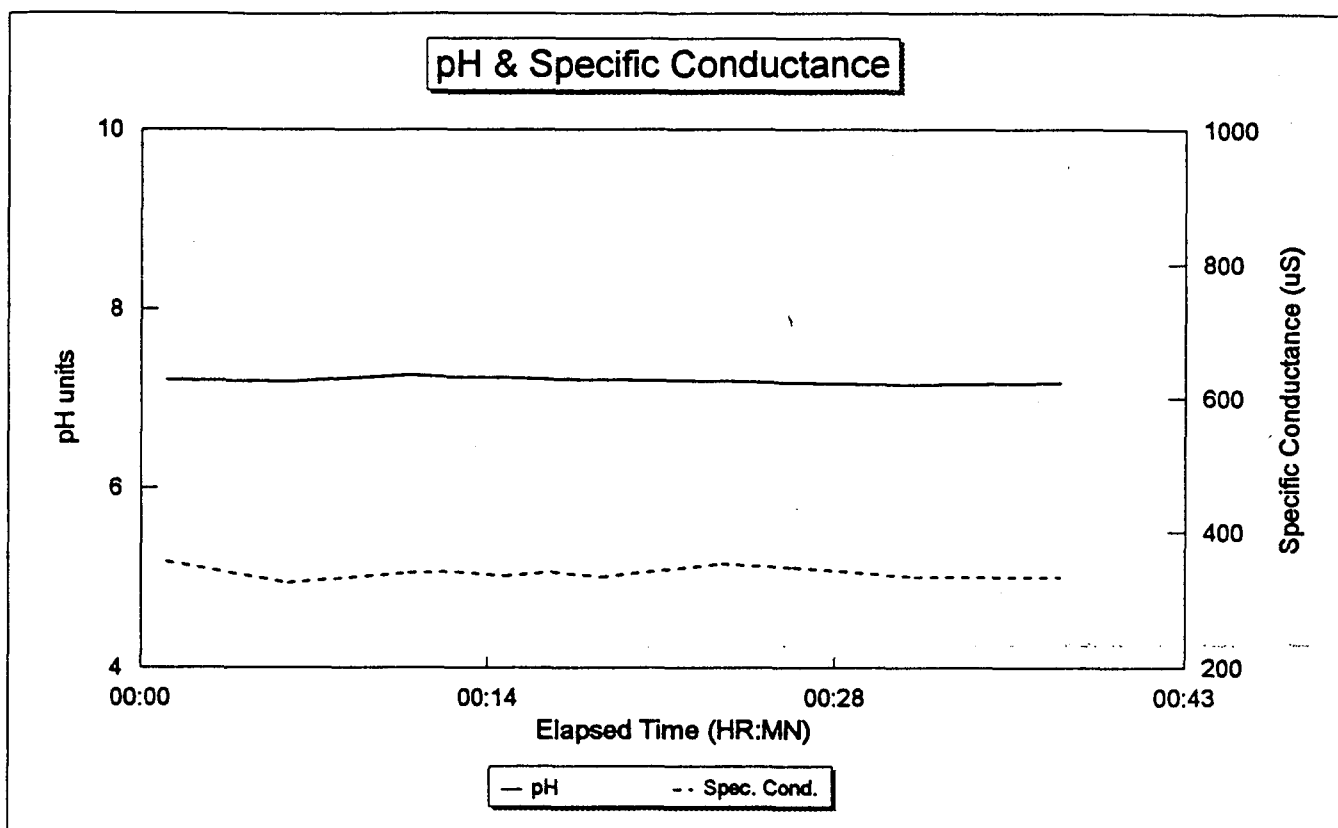
Dissolved Oxygen & Redox Potential



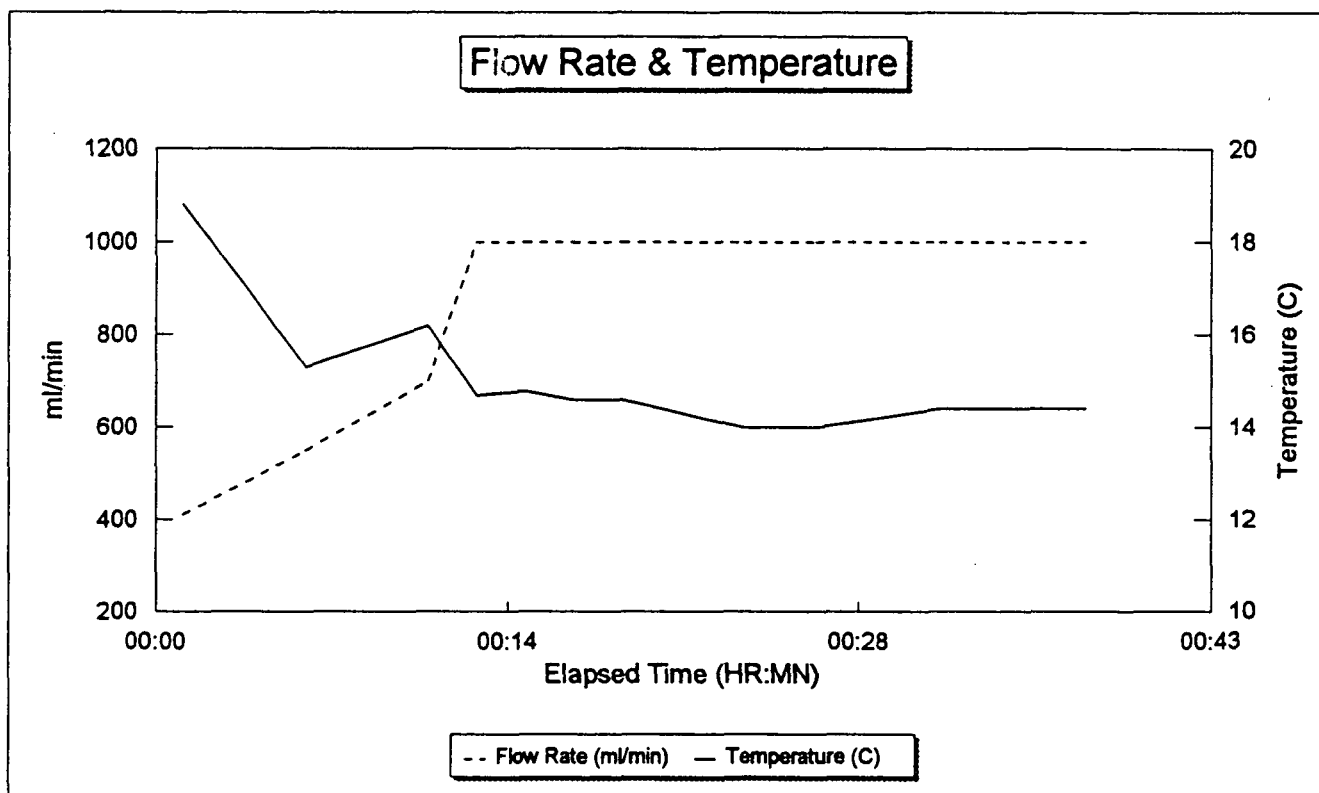
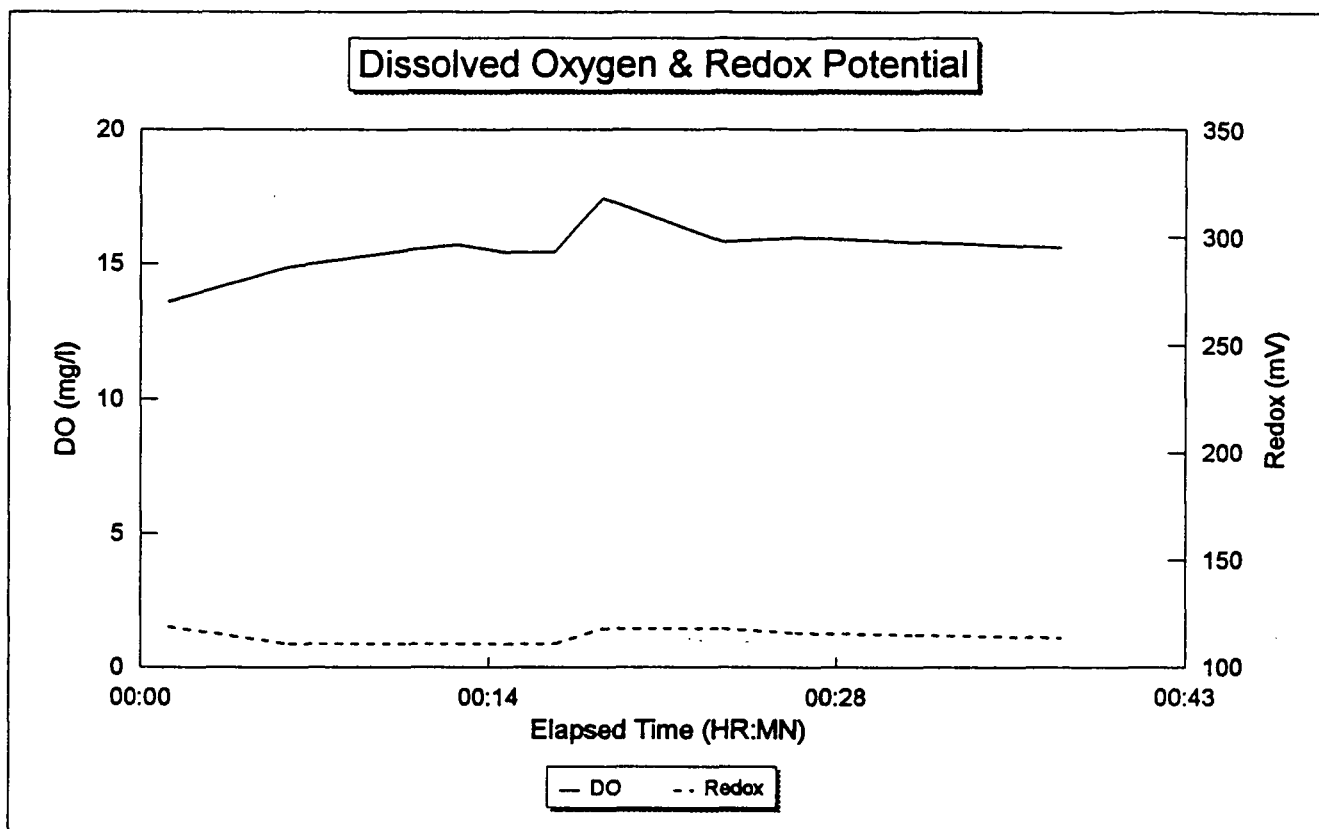
Flow Rate & Temperature



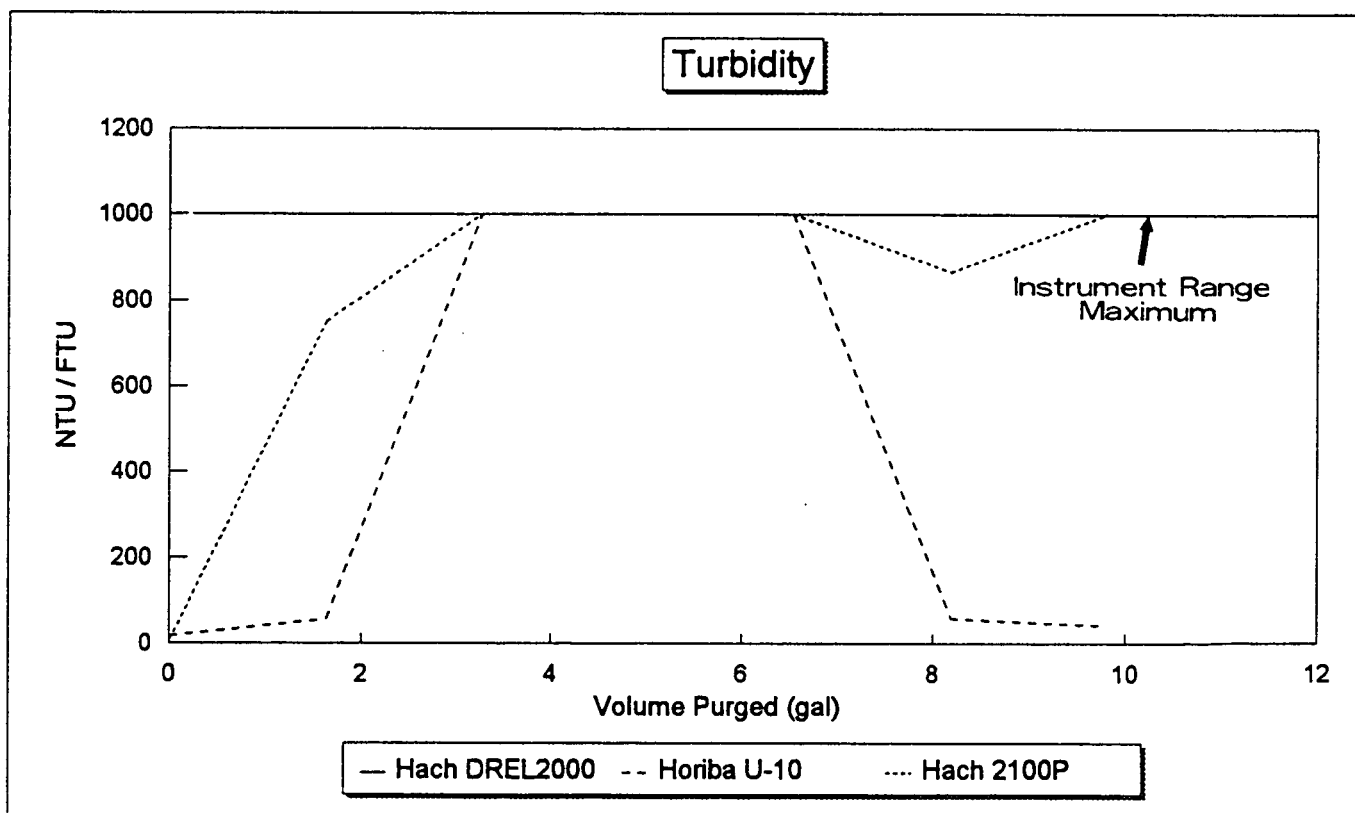
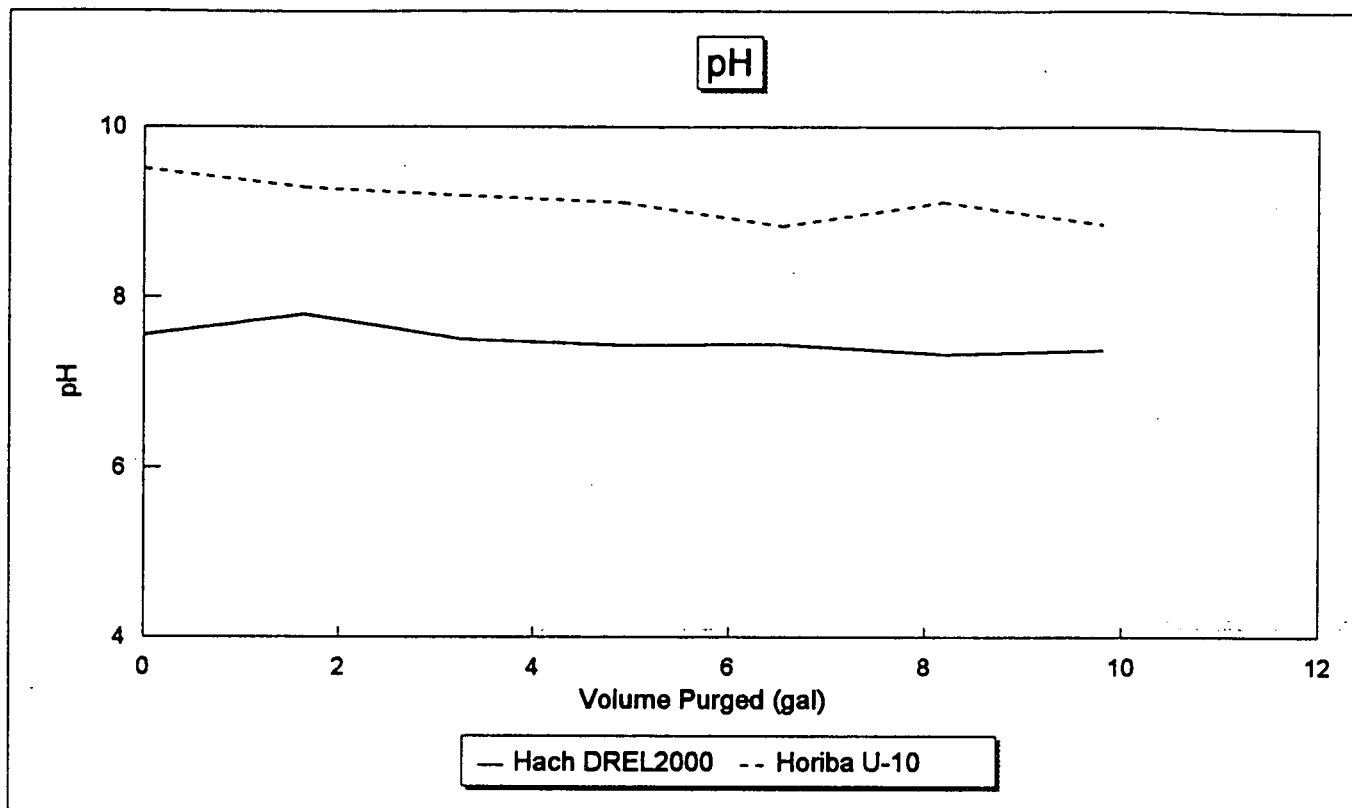
Field Parameter Data - Well 2587 - Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver



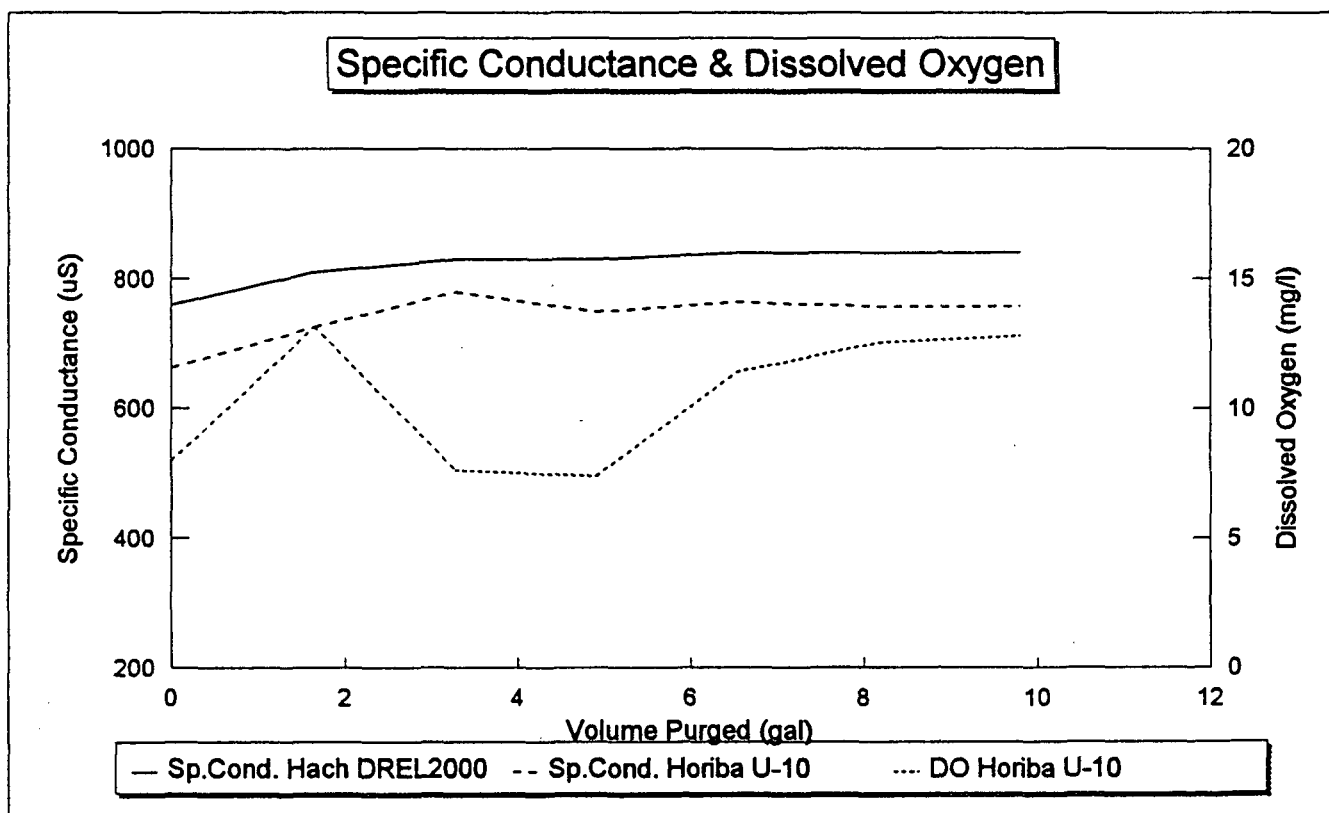
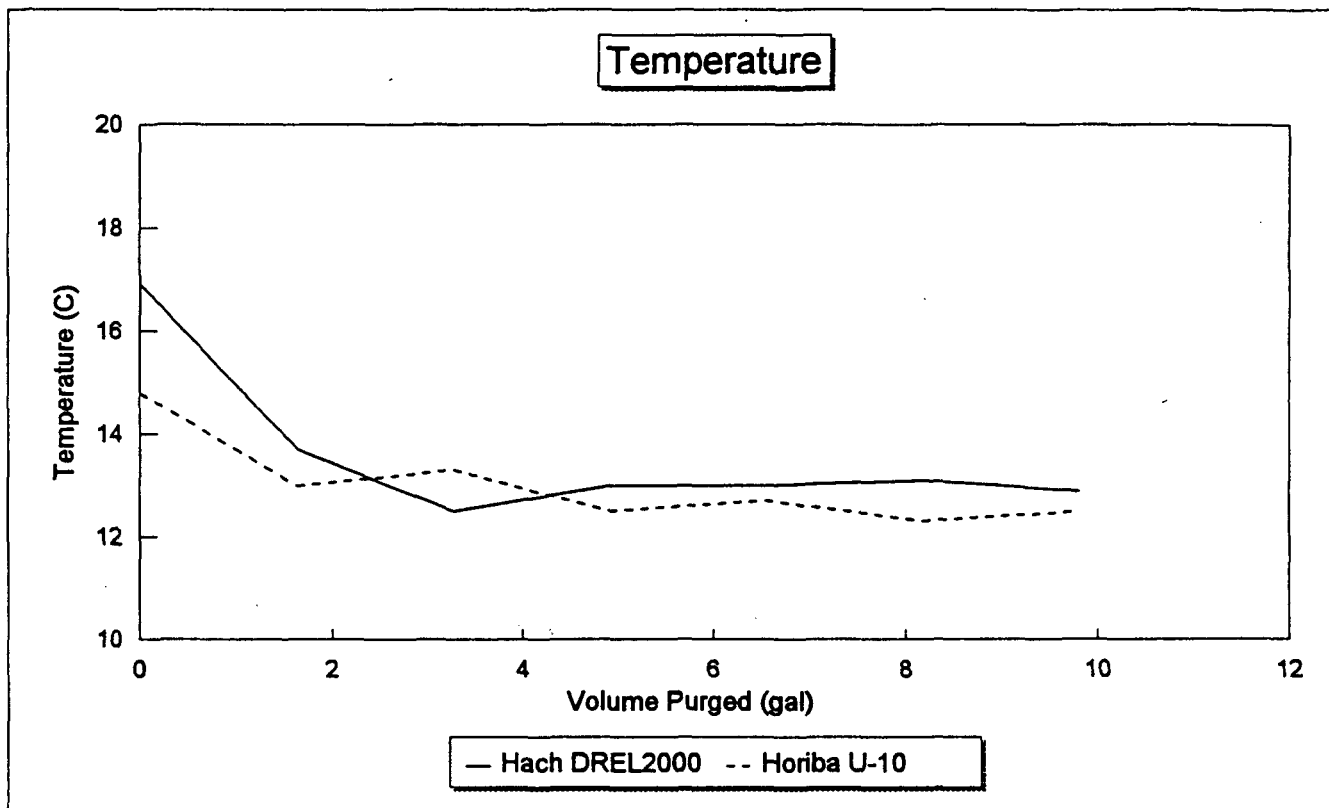
Field Parameter Data - Well 2587 - Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver



Field Parameter Data - Well 2587 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

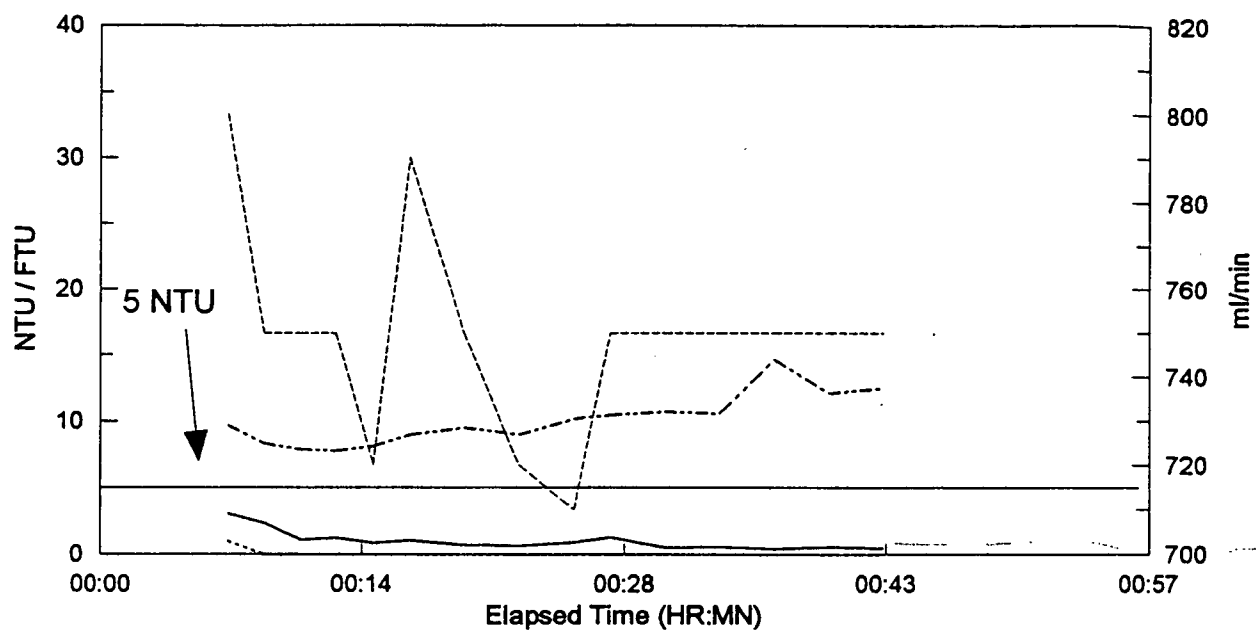


Field Parameter Data - Well 2587 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

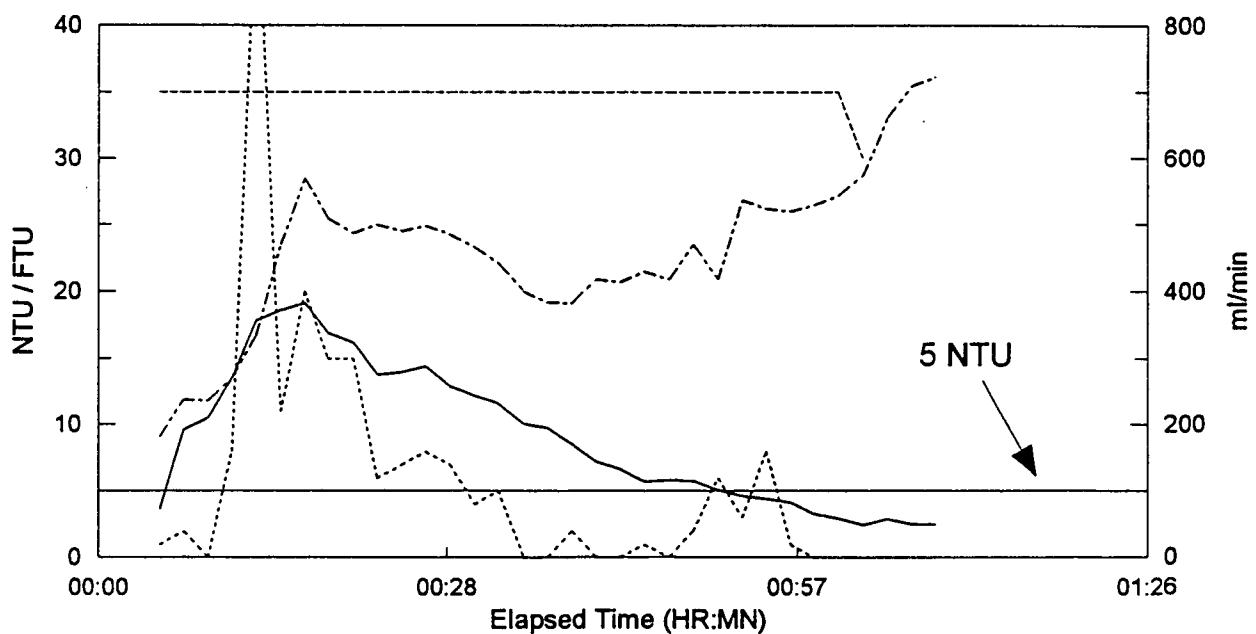


Flow vs Turbidity - Well 2587

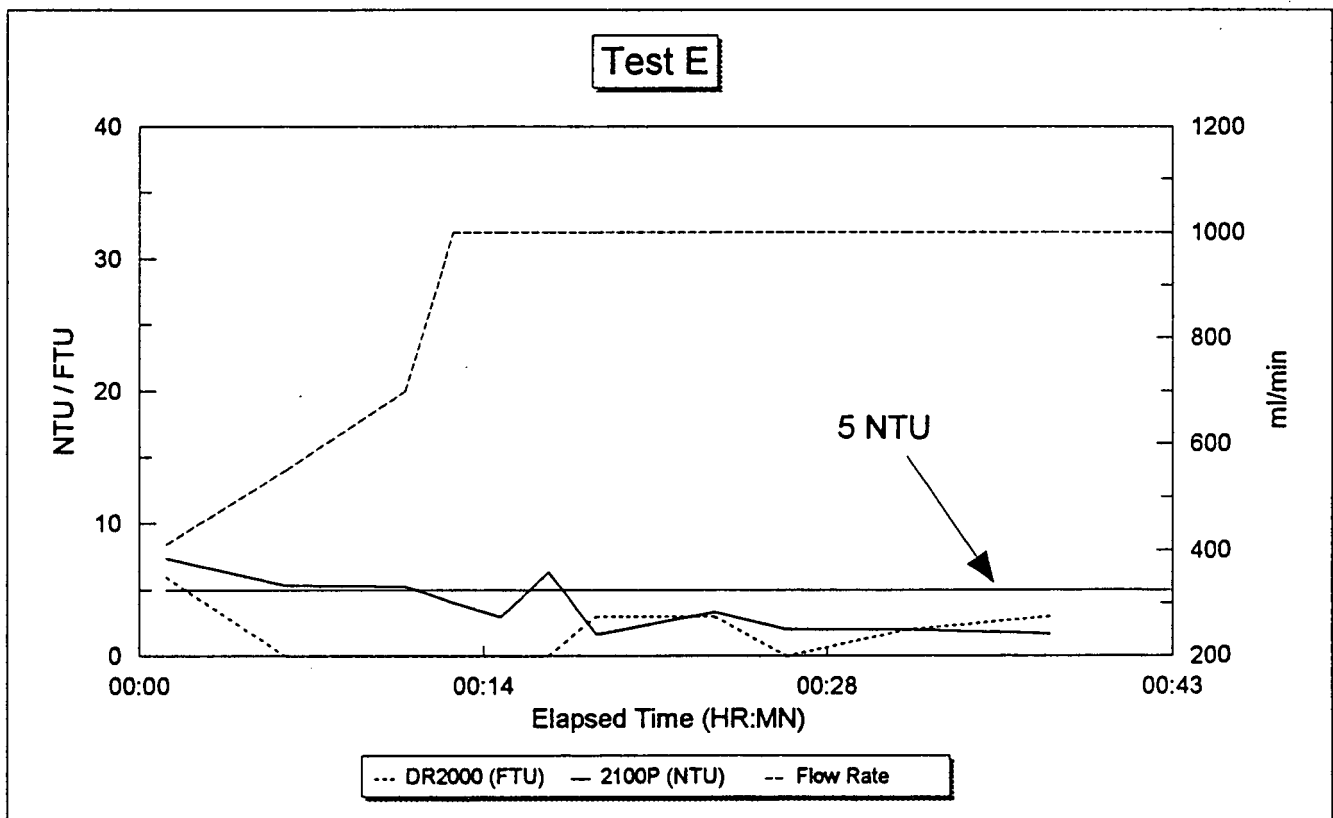
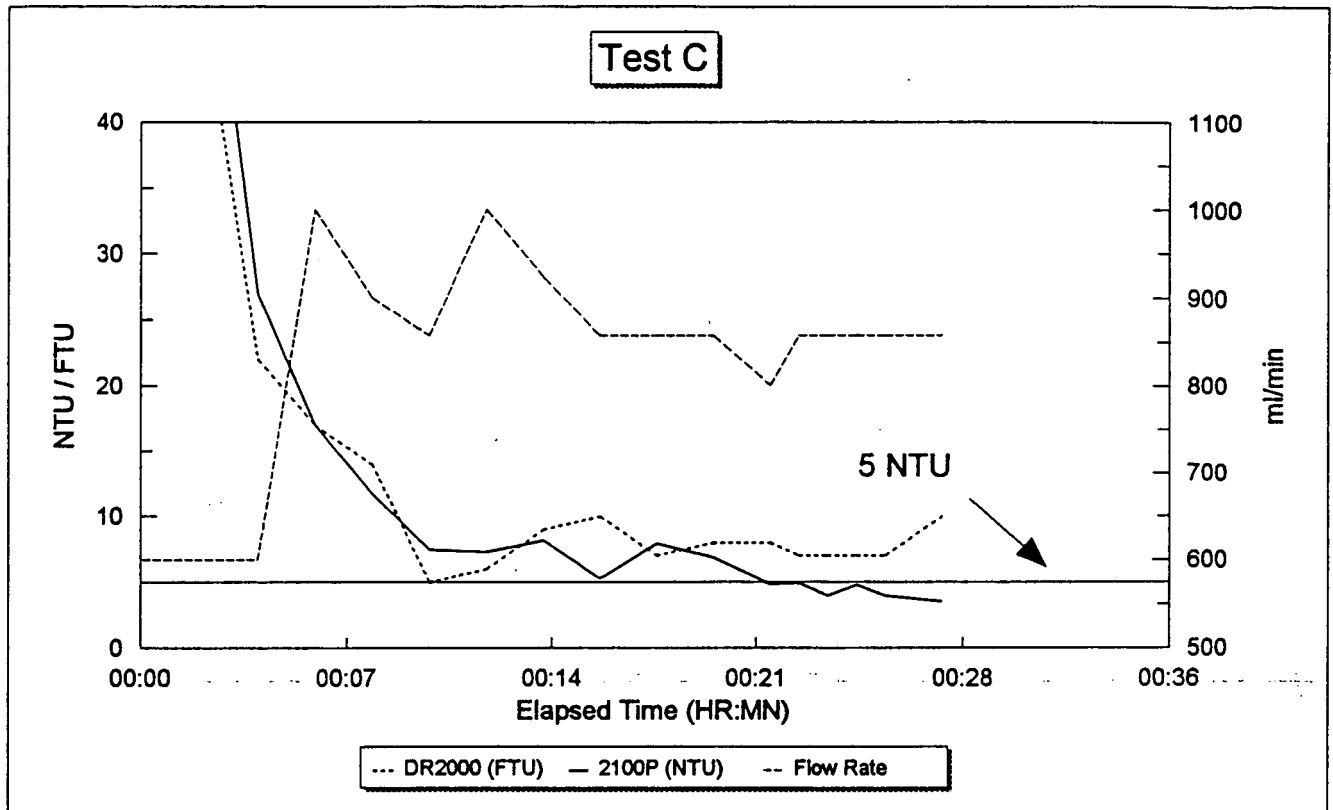
Test A



Test B

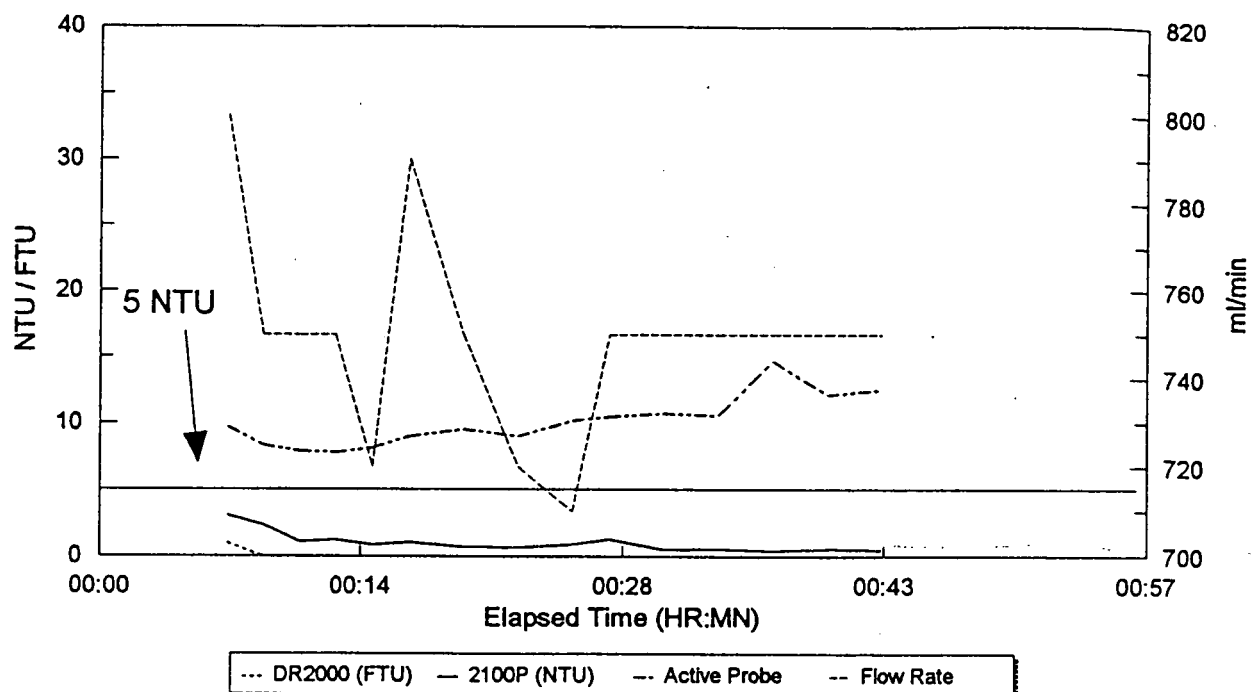


Flow vs Turbidity - Well 2587

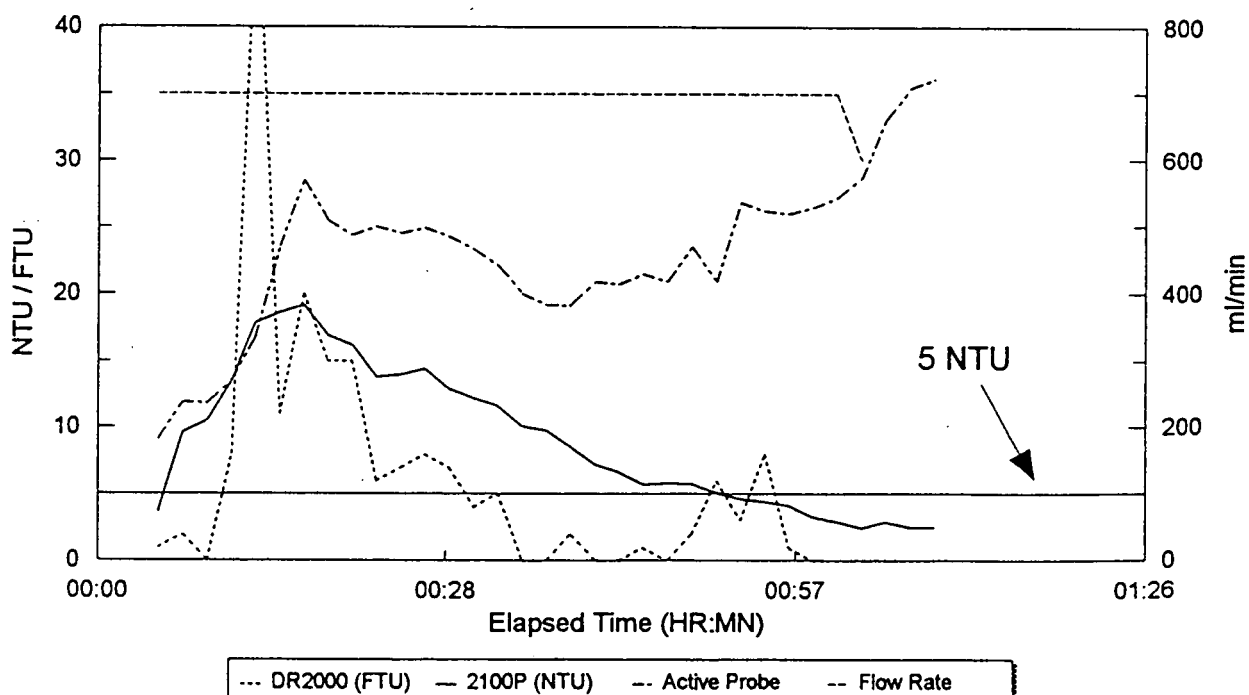


Flow vs Turbidity - Well 2587

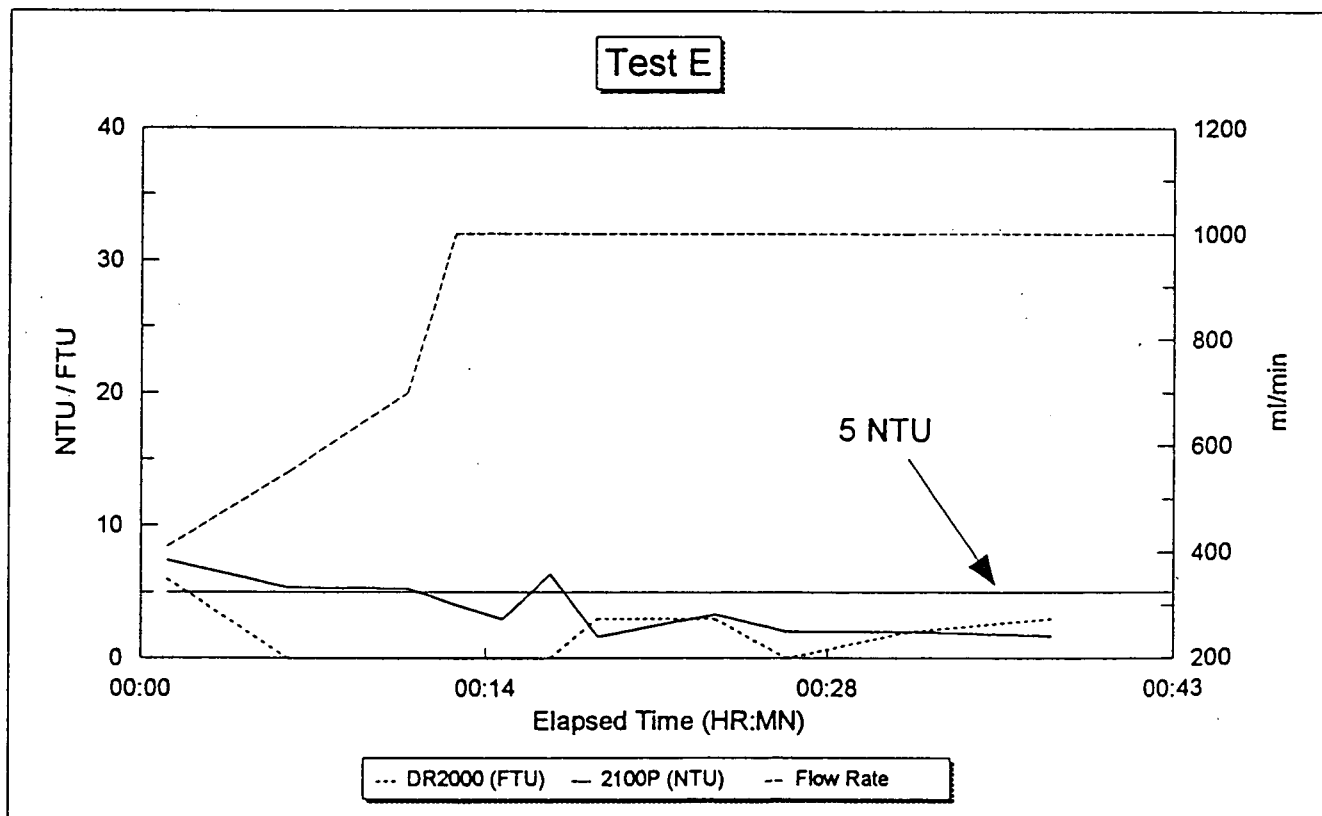
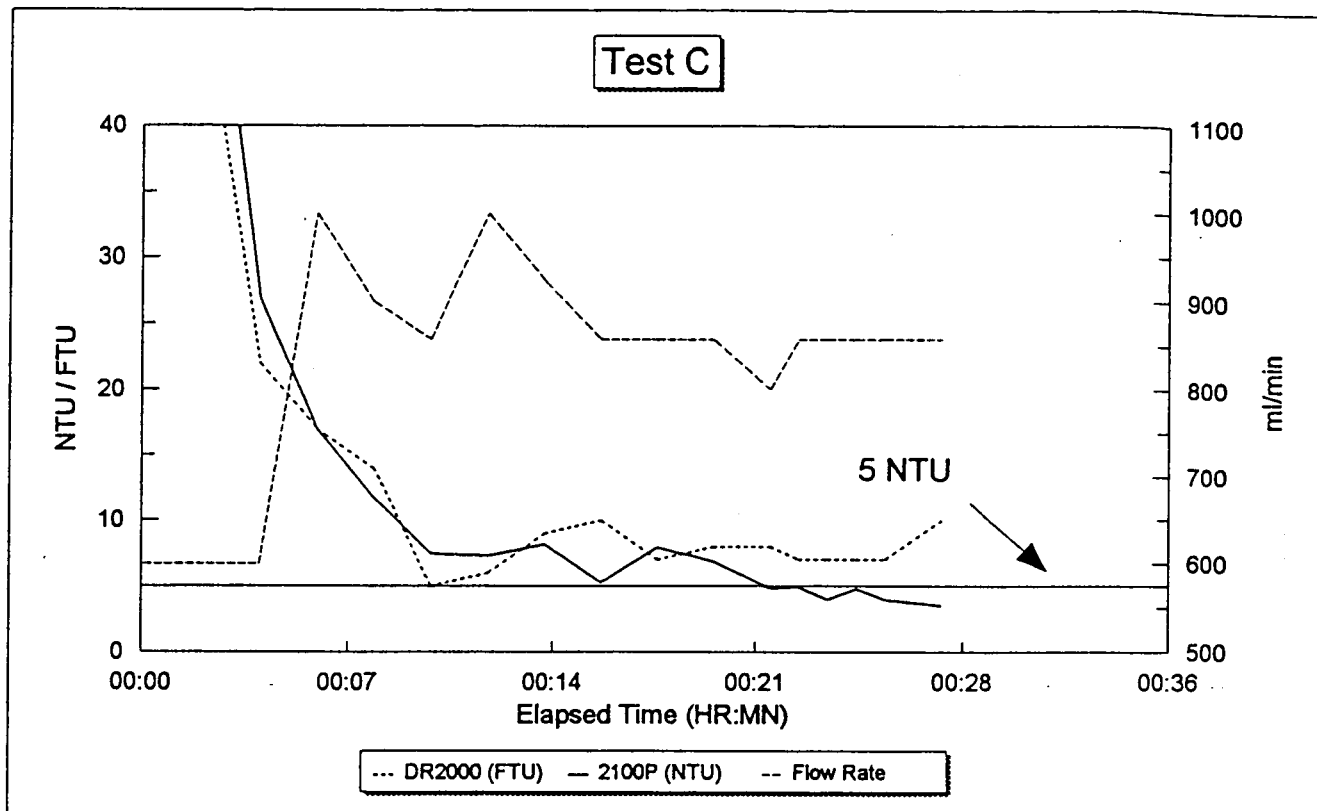
Test A



Test B

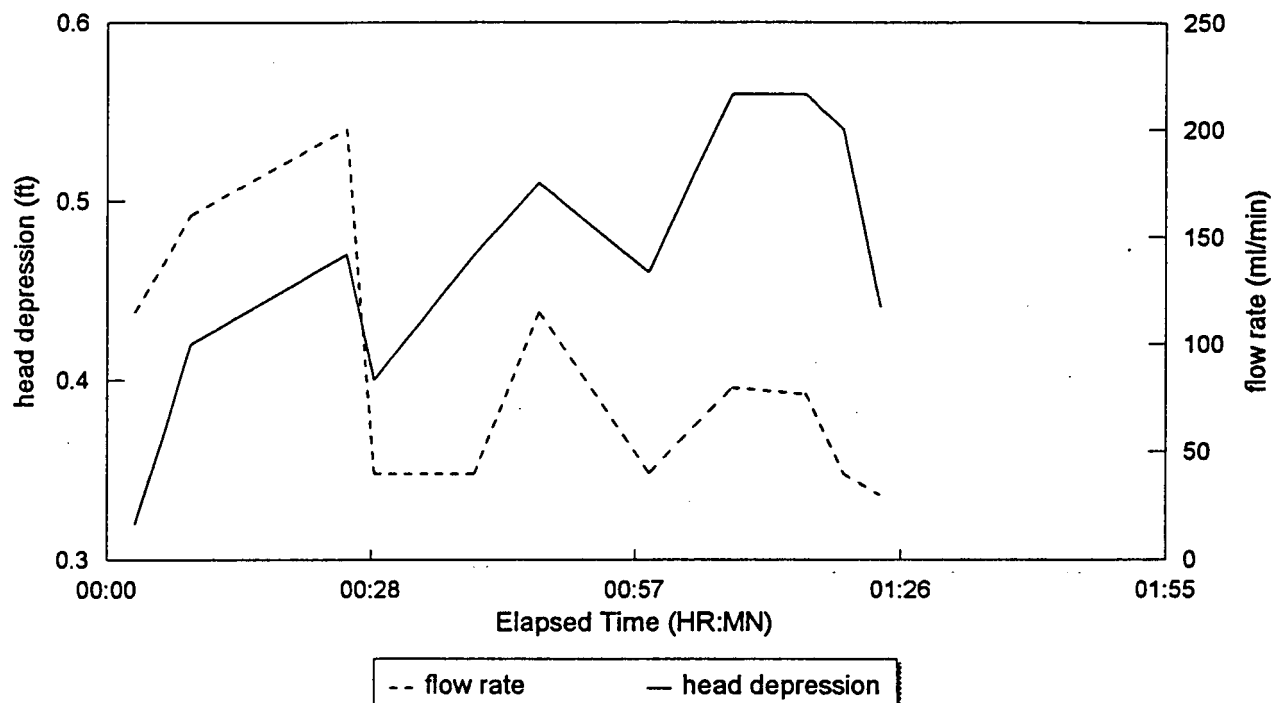


Flow vs Turbidity - Well 2587

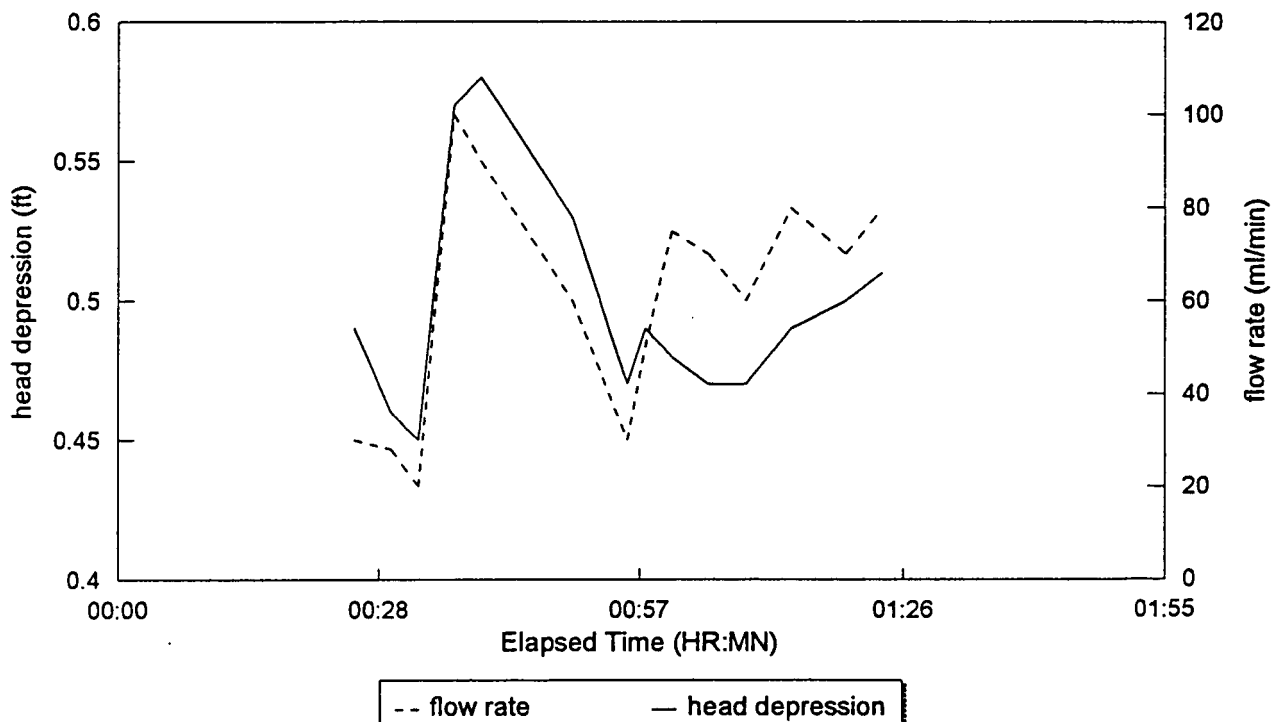


Head Depression vs Flow Rate - Well 20591

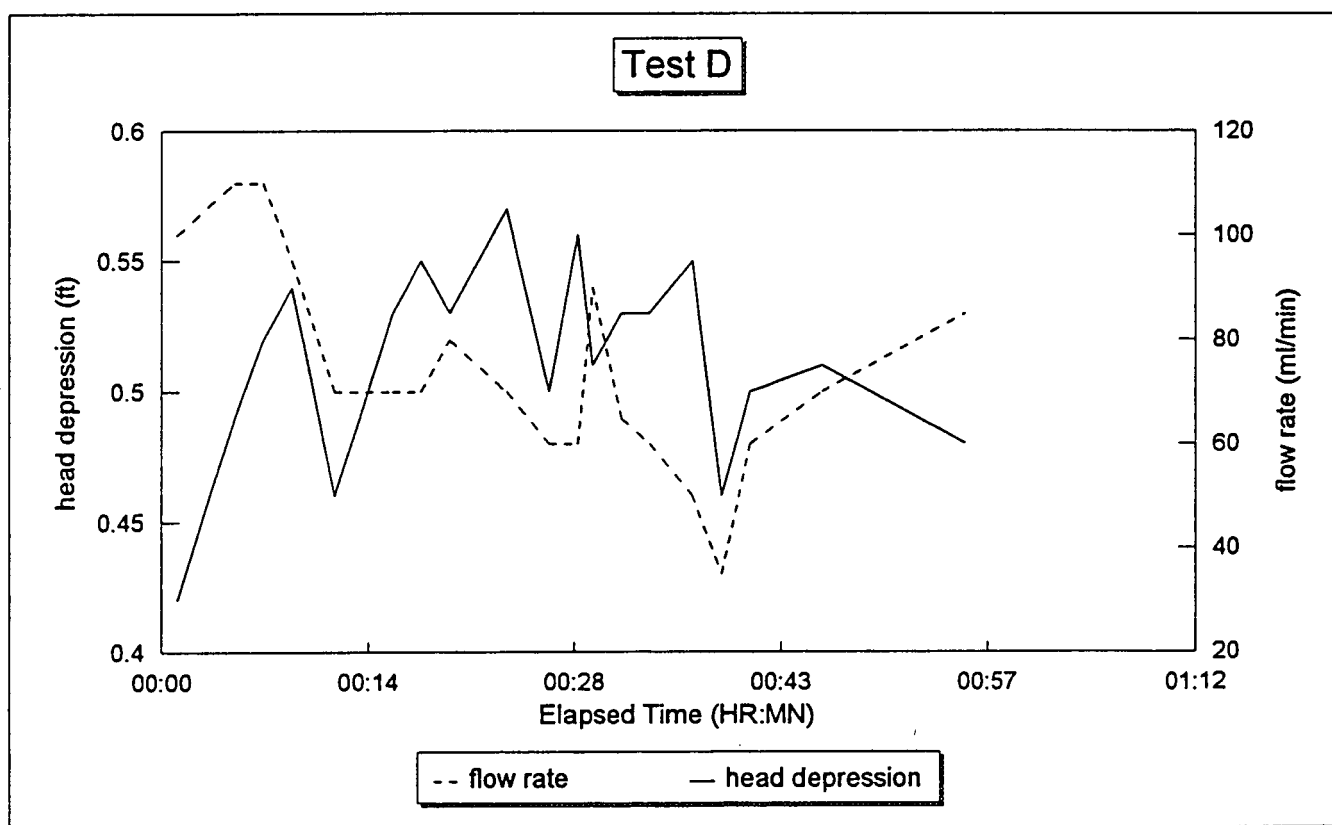
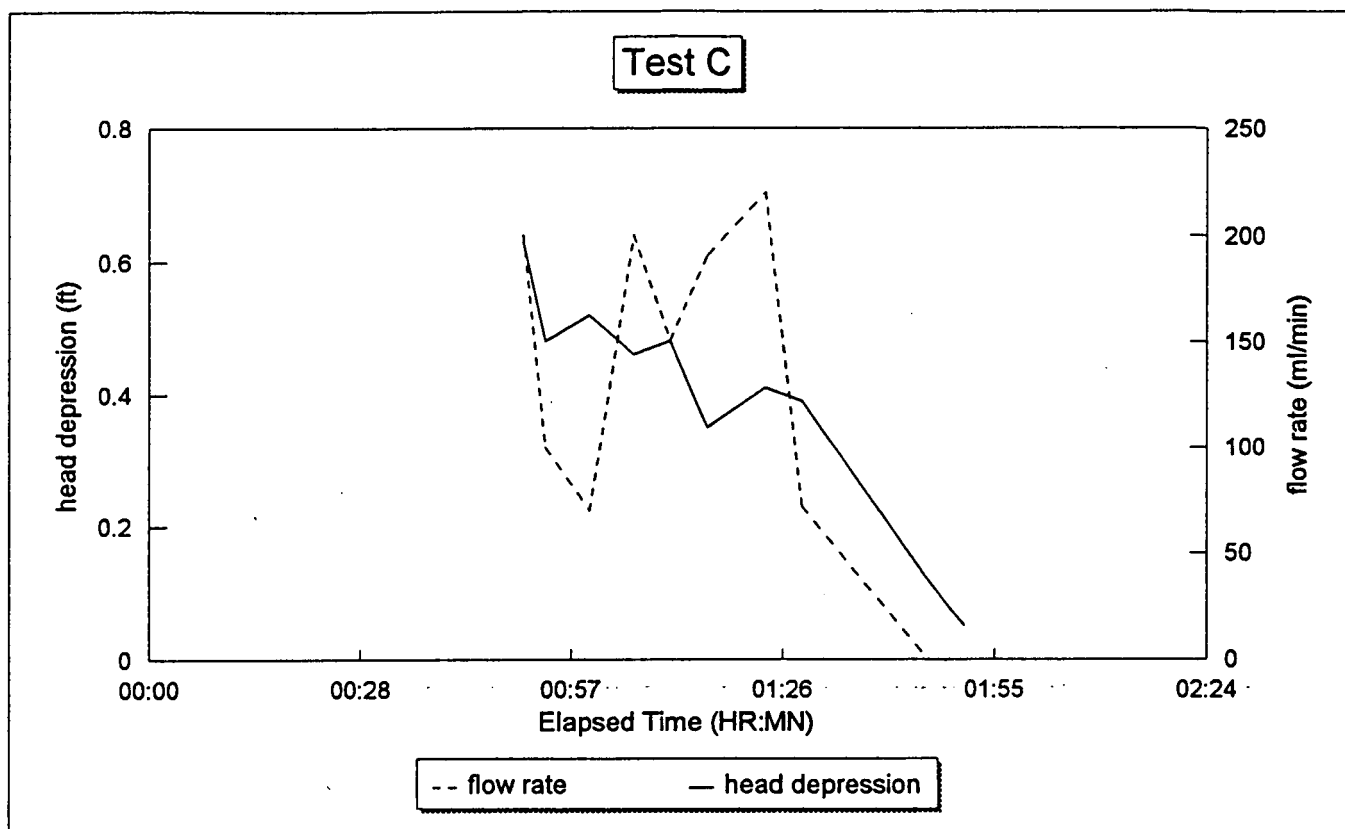
Test A



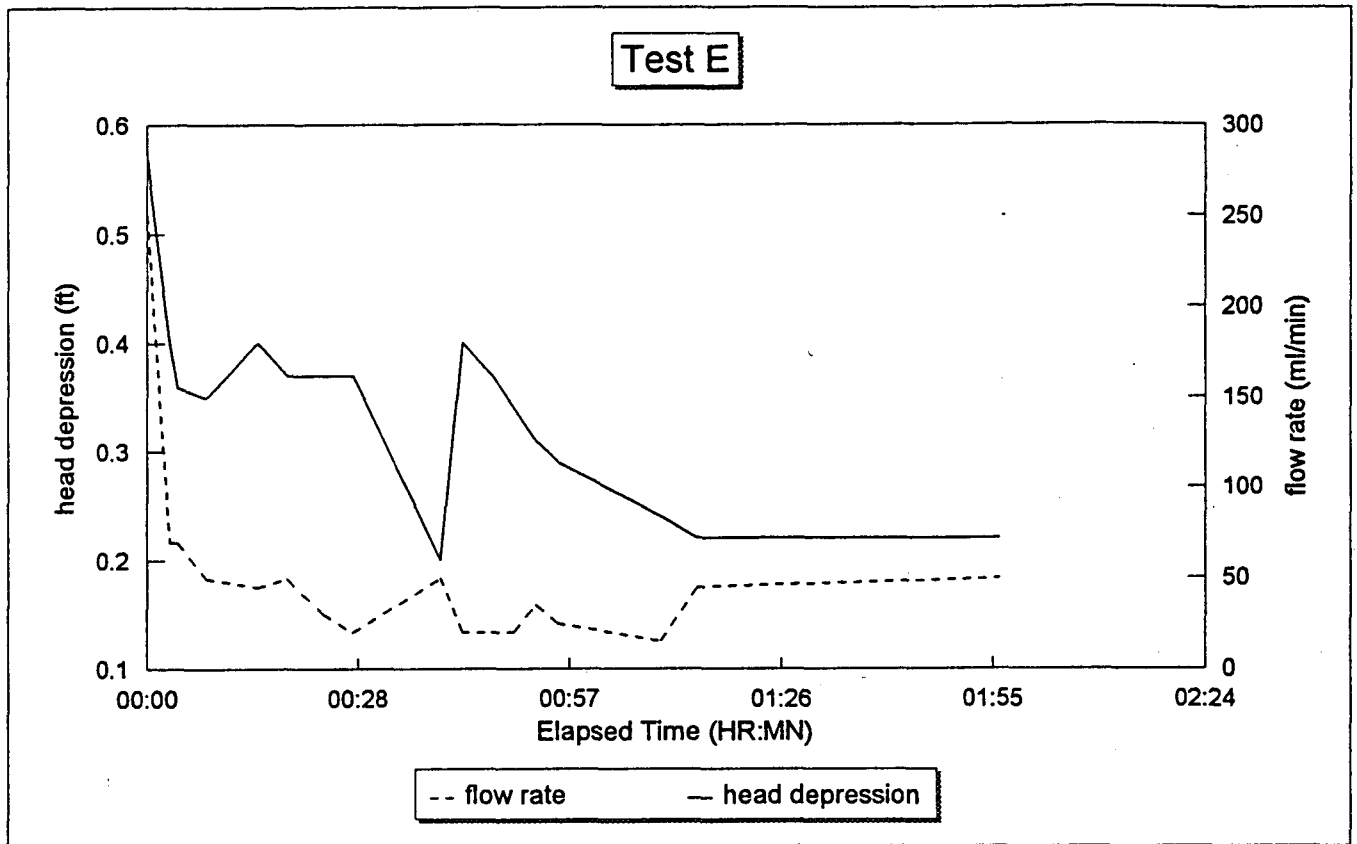
Test B



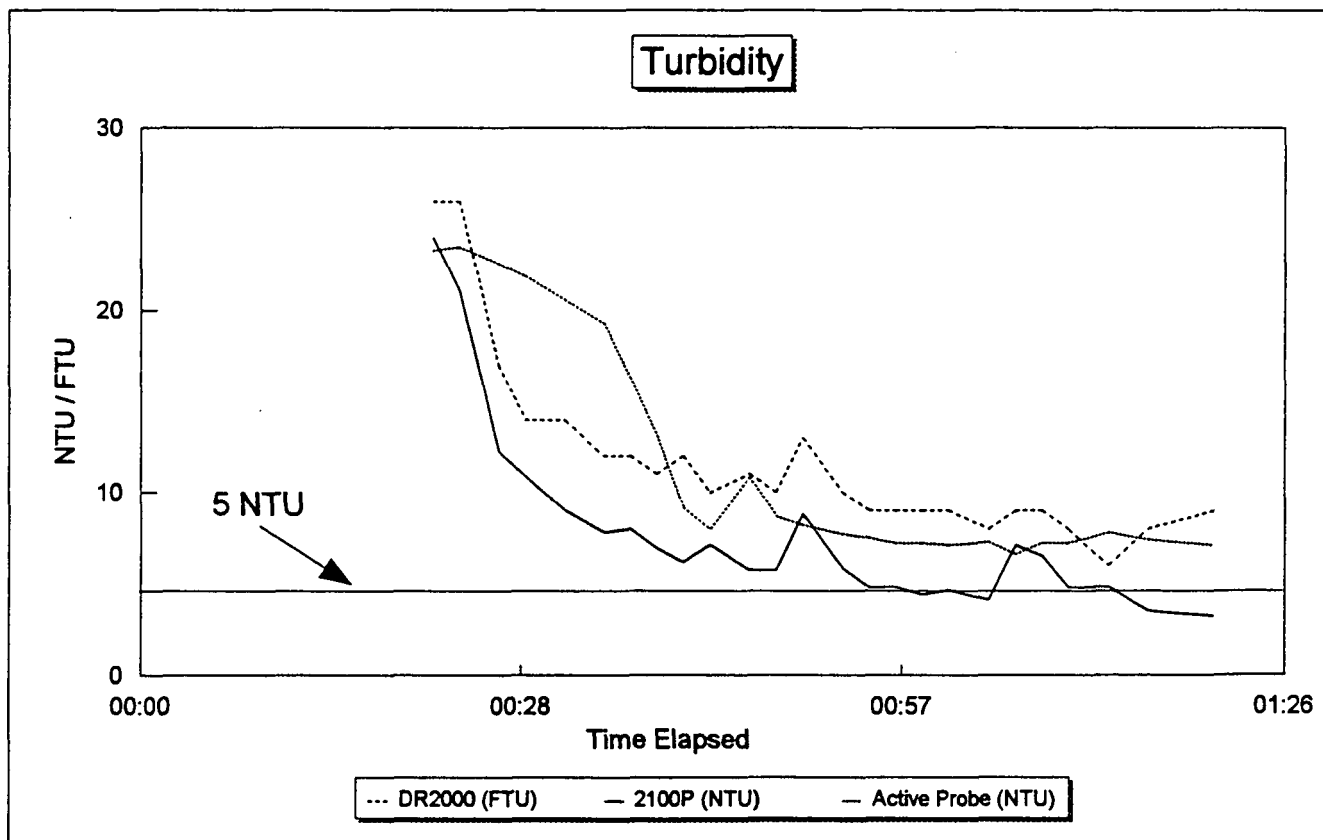
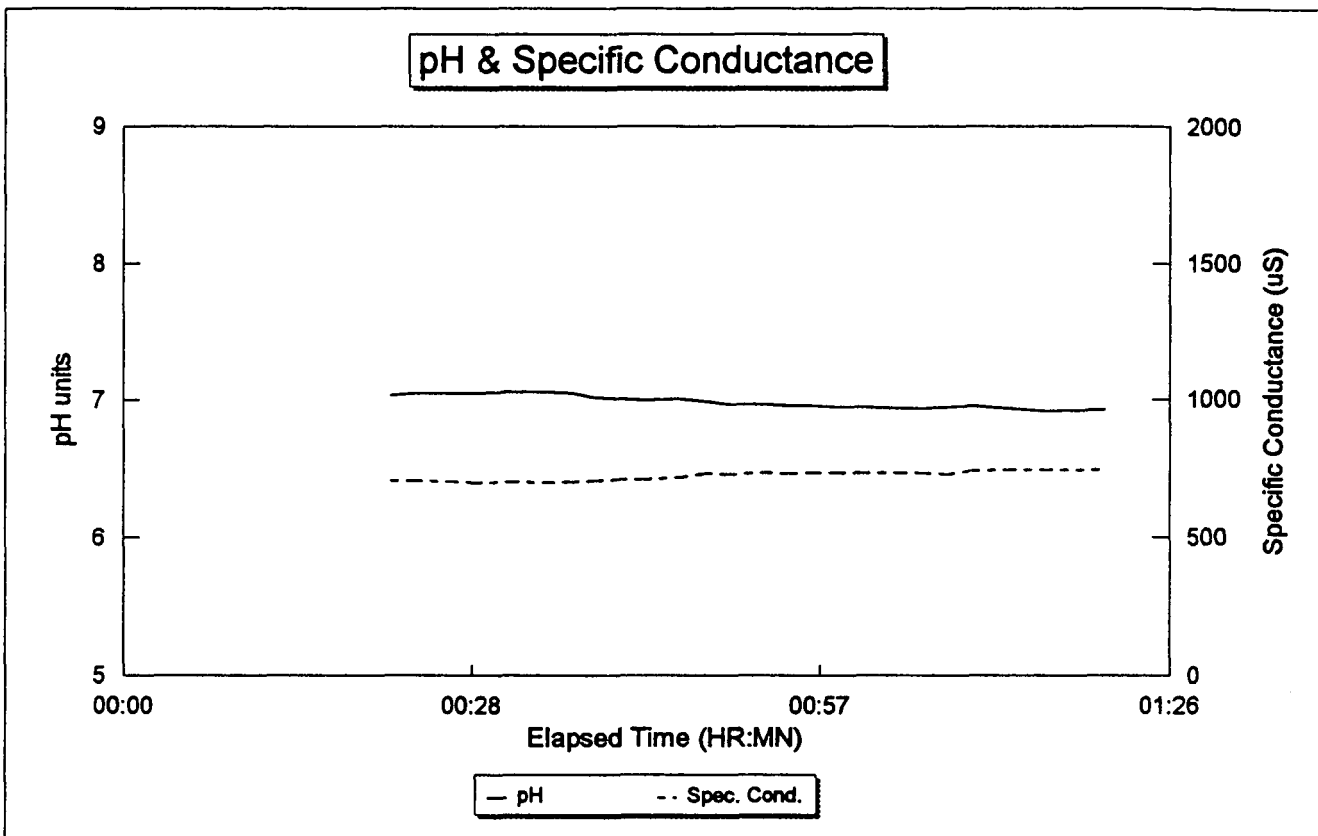
Head Depression vs Flow Rate - Well 20591



Head Depression vs Flow Rate - Well 20591

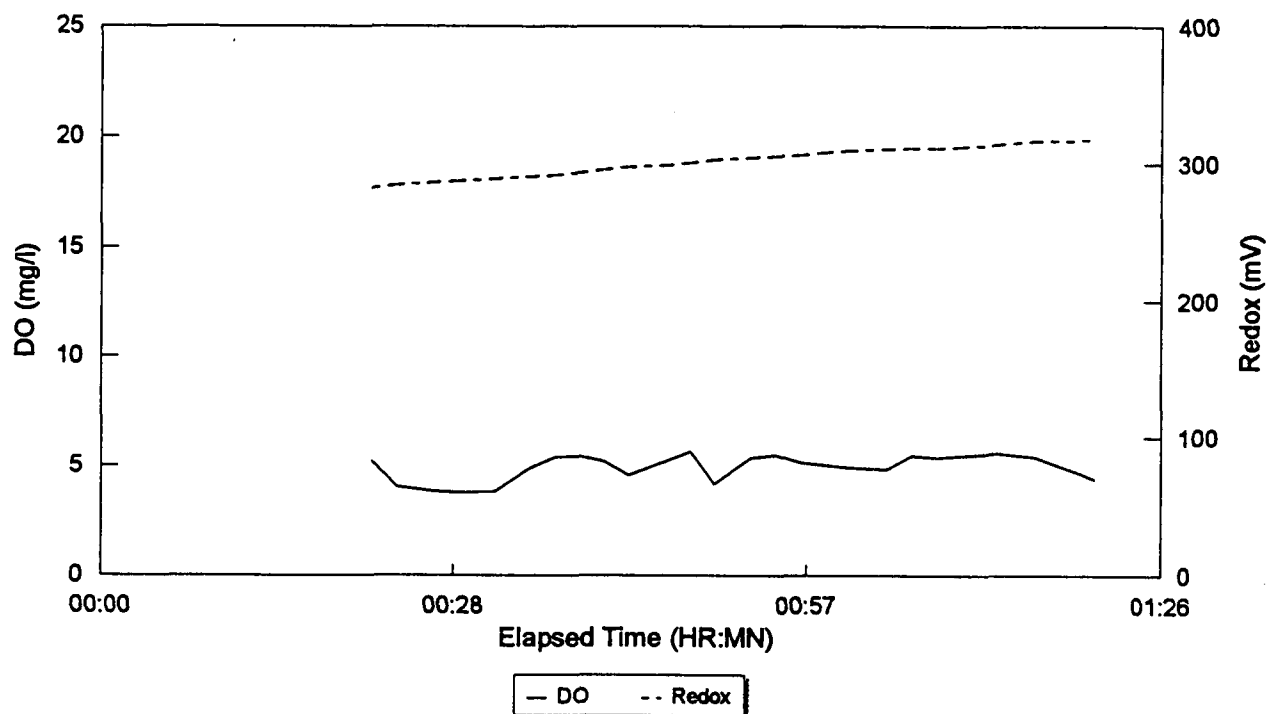


Field Parameter Data - Well 20591 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20

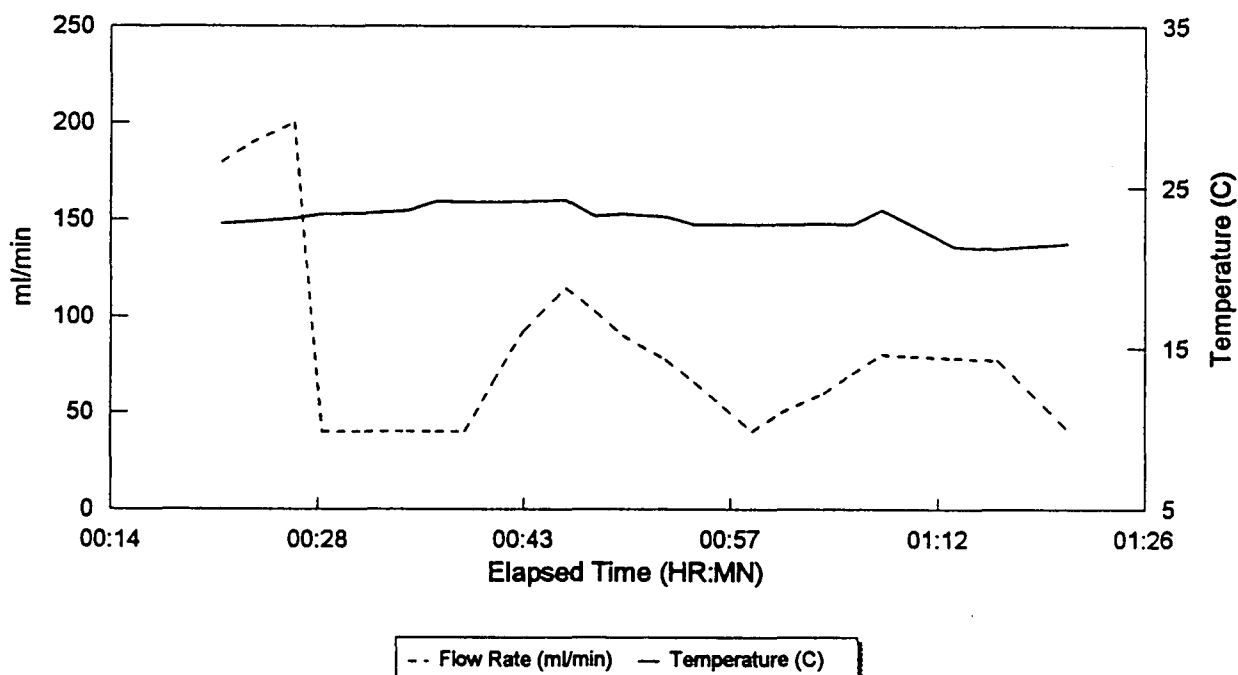


Field Parameter Data - Well 20591 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20

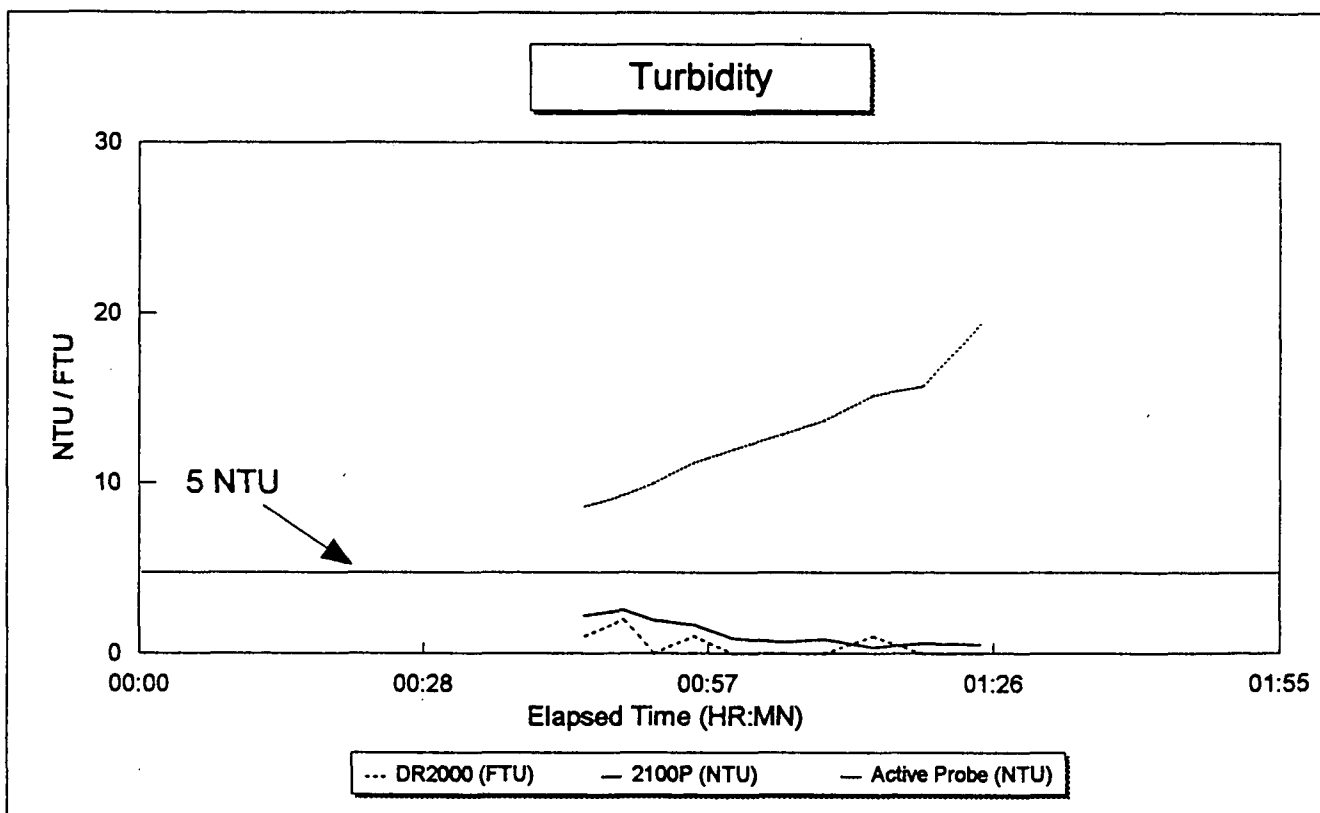
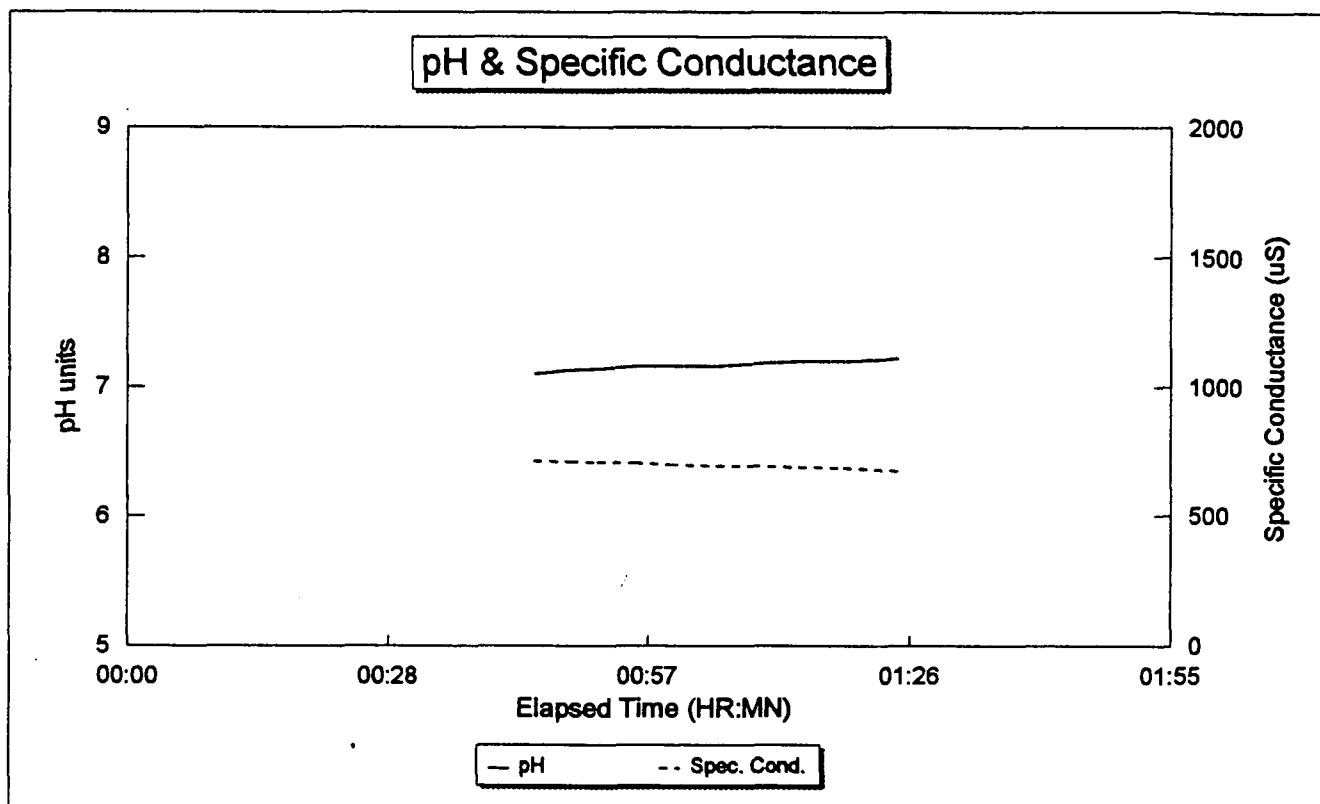
Dissolved Oxygen & Redox Potential



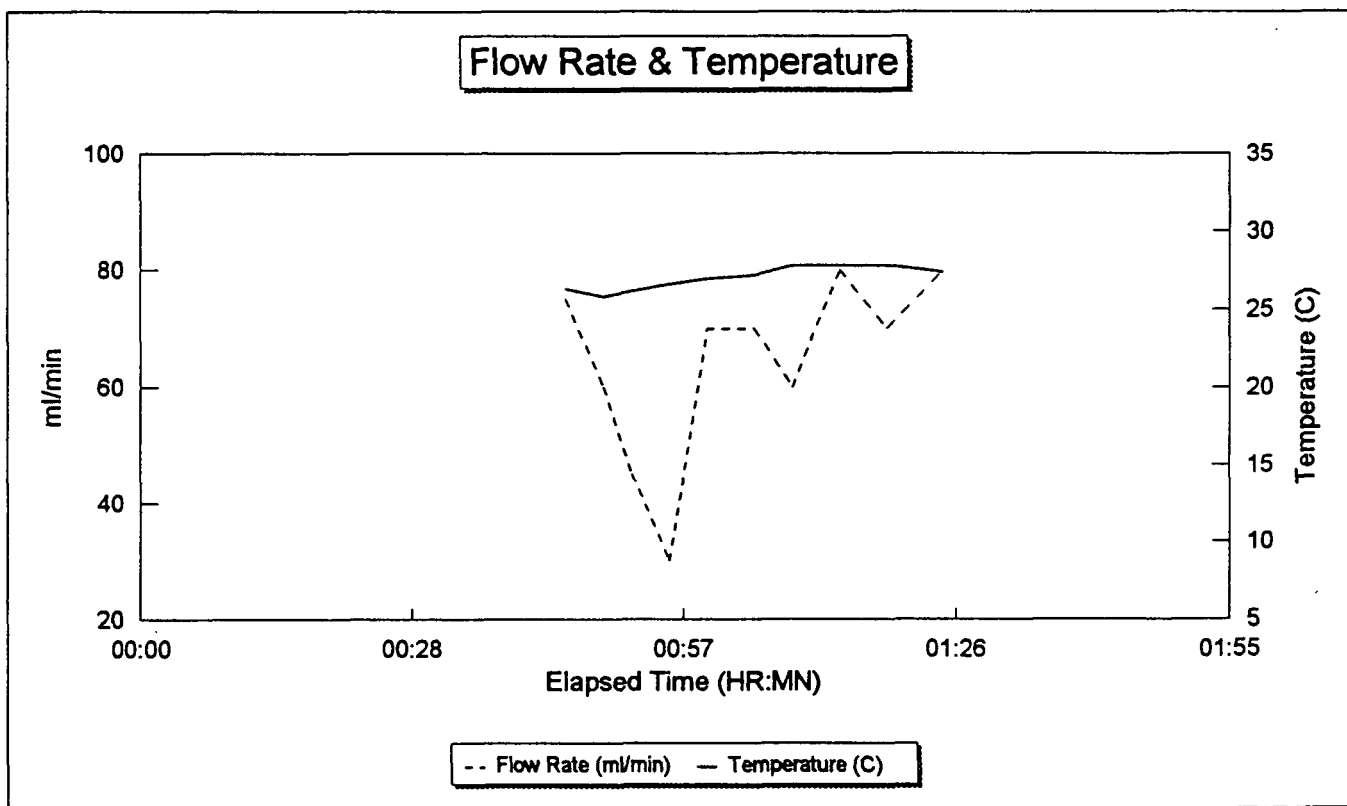
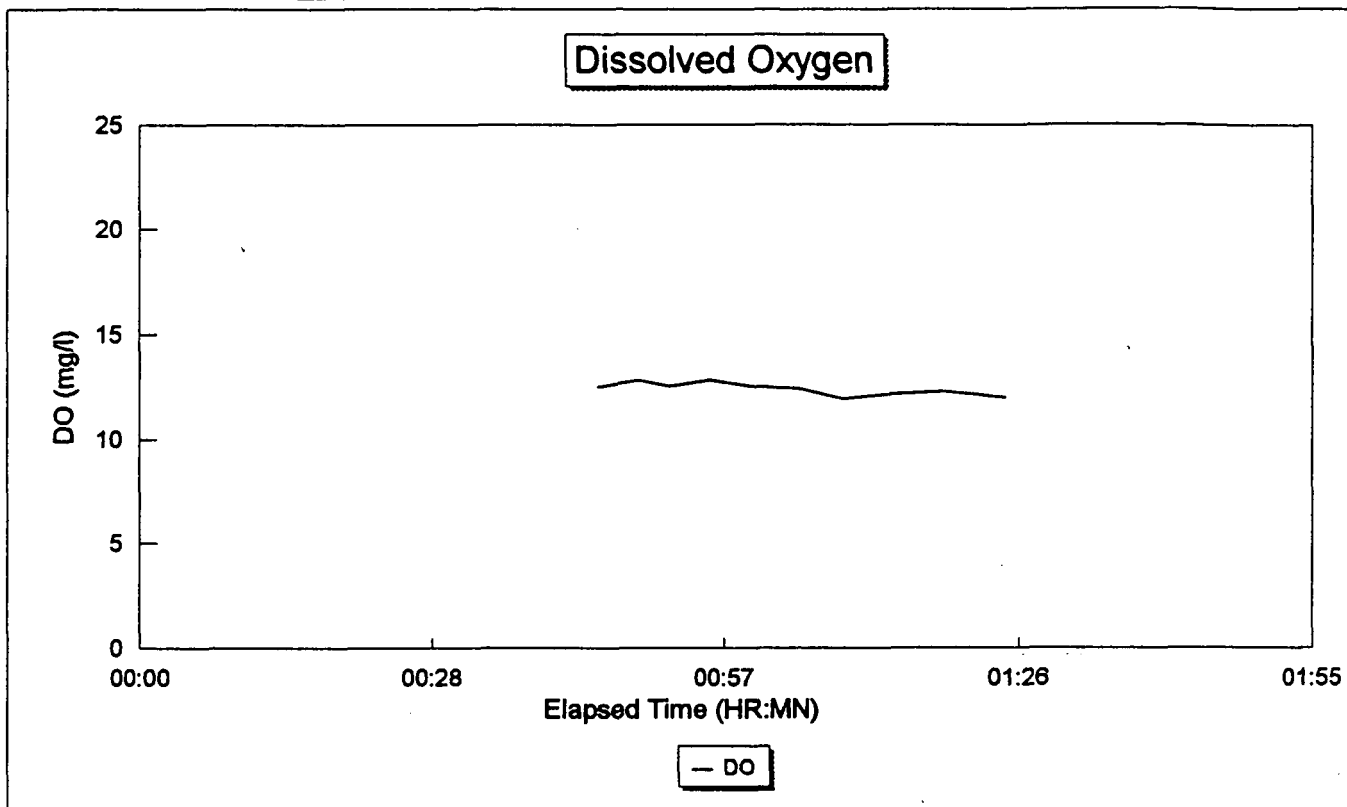
Flow Rate & Temperature



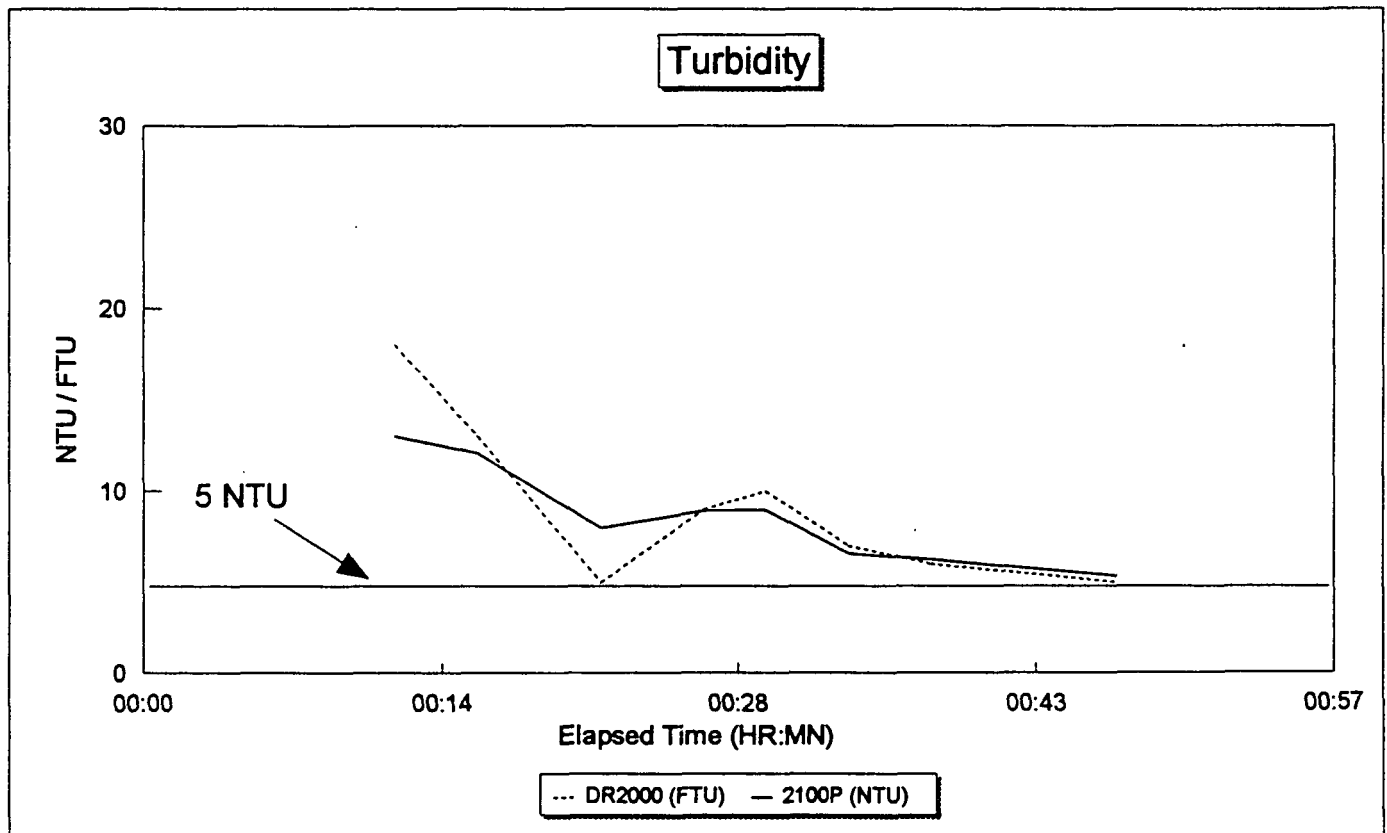
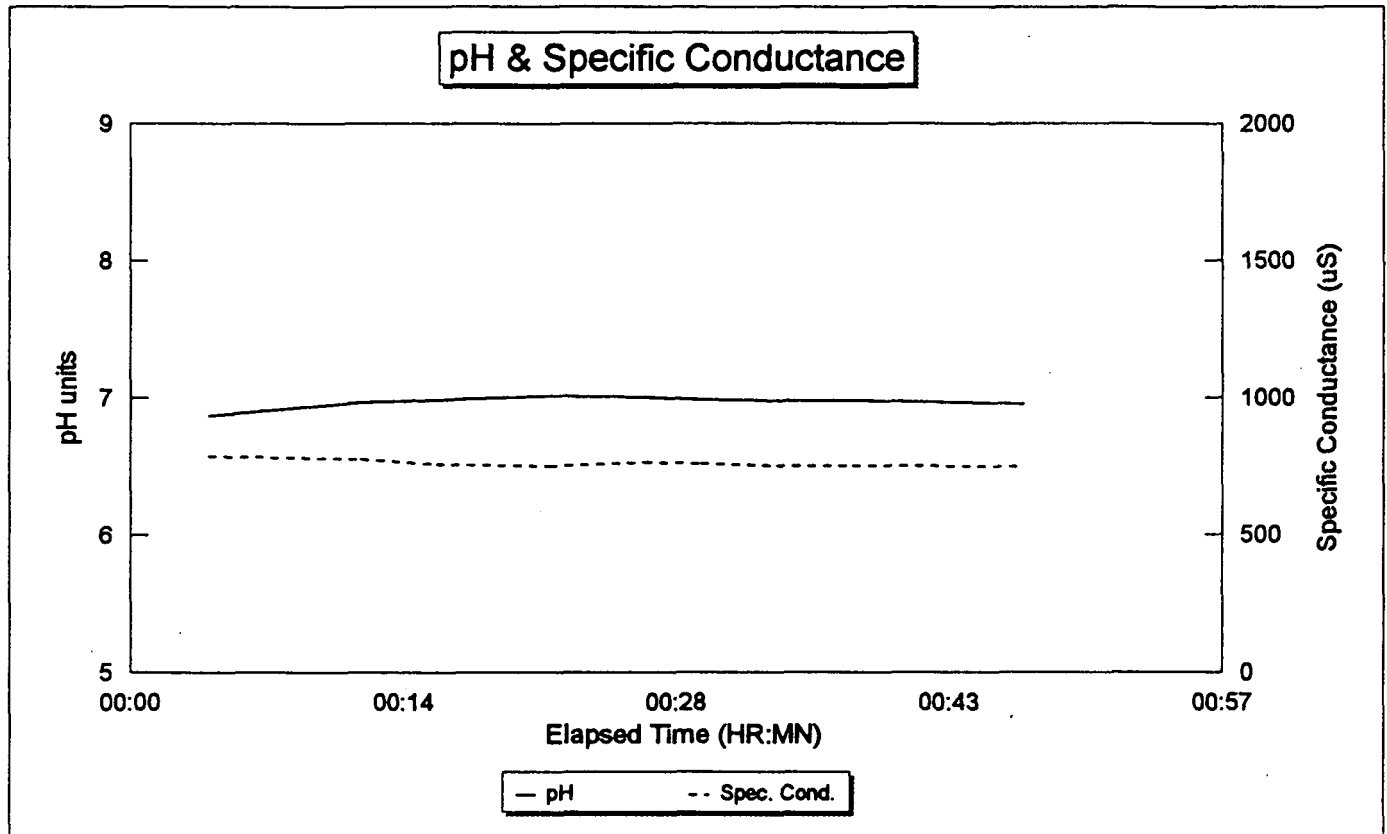
Field Parameter Data - Well 20591- Test B
Pump: Marschalk Bladder Pump - Instrumentation: Solomat



Field Parameter Data - Well 20591- Test B
Pump: Marschalk Bladder Pump - Instrumentation: Solomat

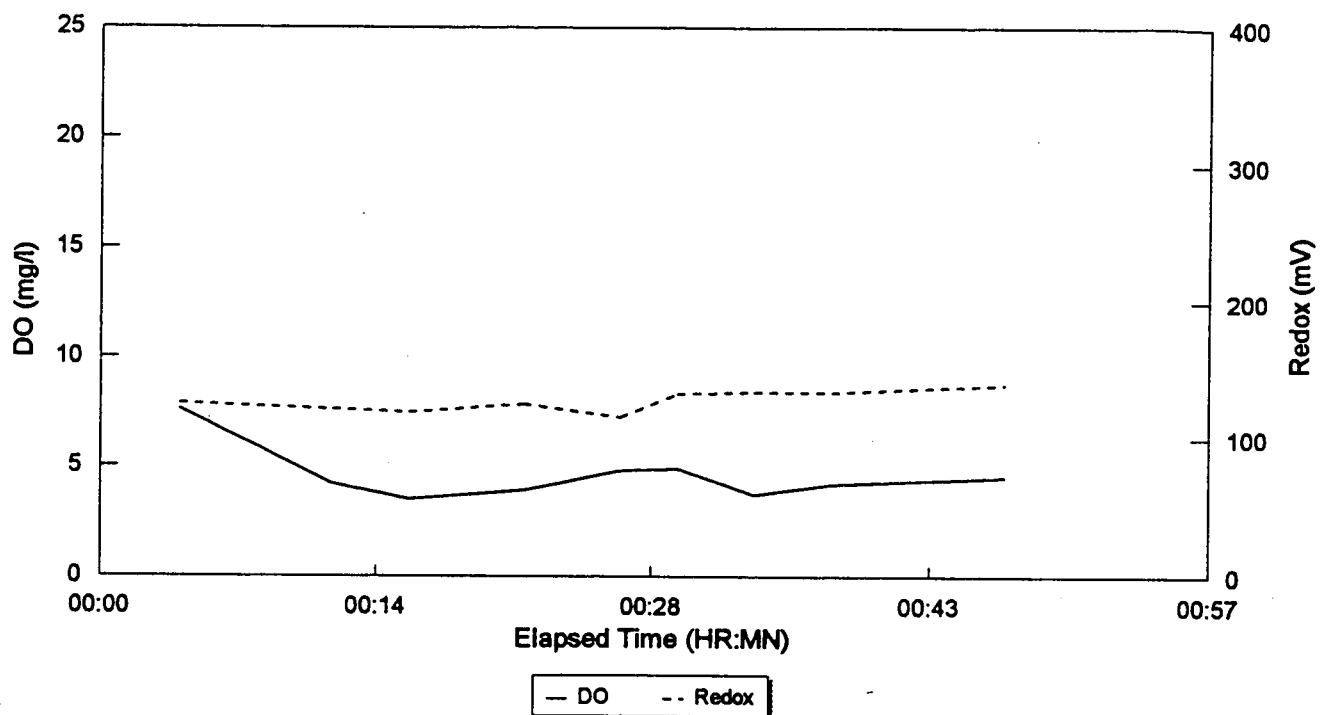


Field Parameter Data - Well 20591 - Test C
Pump: Grundfos - Instrumentation: Orion/Geotech Flow Cell

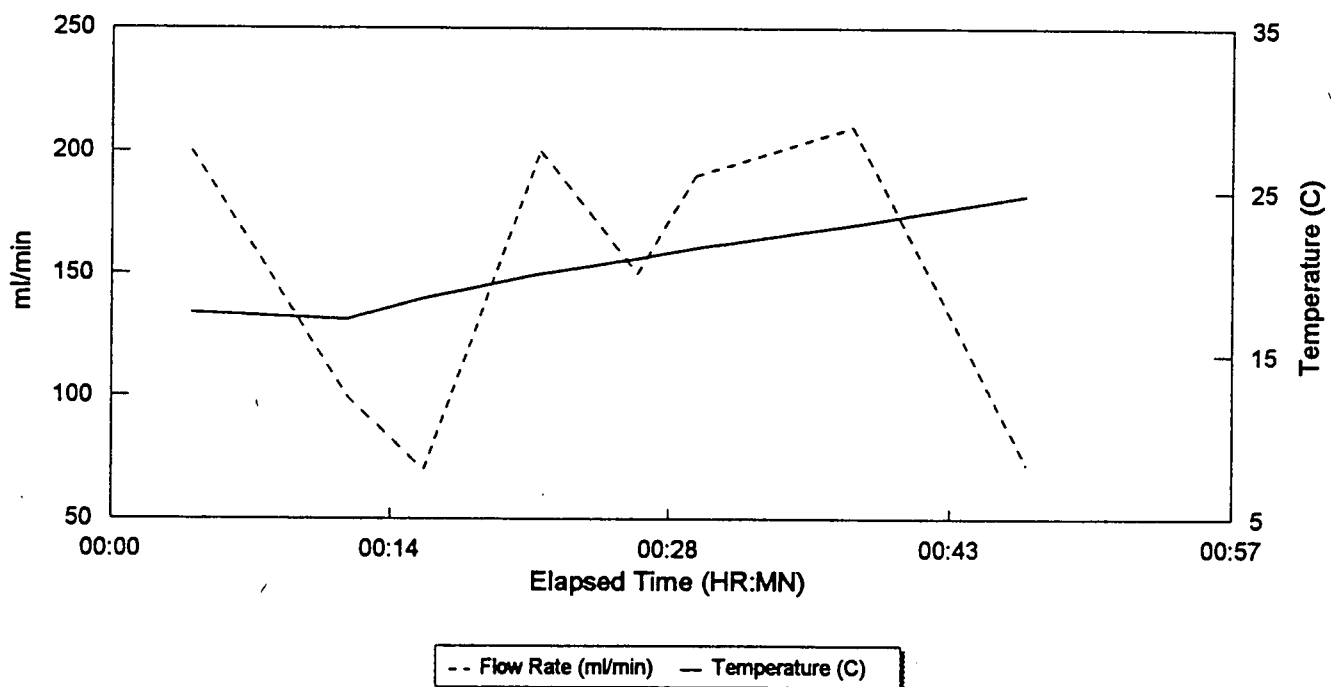


Field Parameter Data - Well 20591- Test C
Pump: Grundfos - Instrumentation: Orion/Geotech Flow Cell

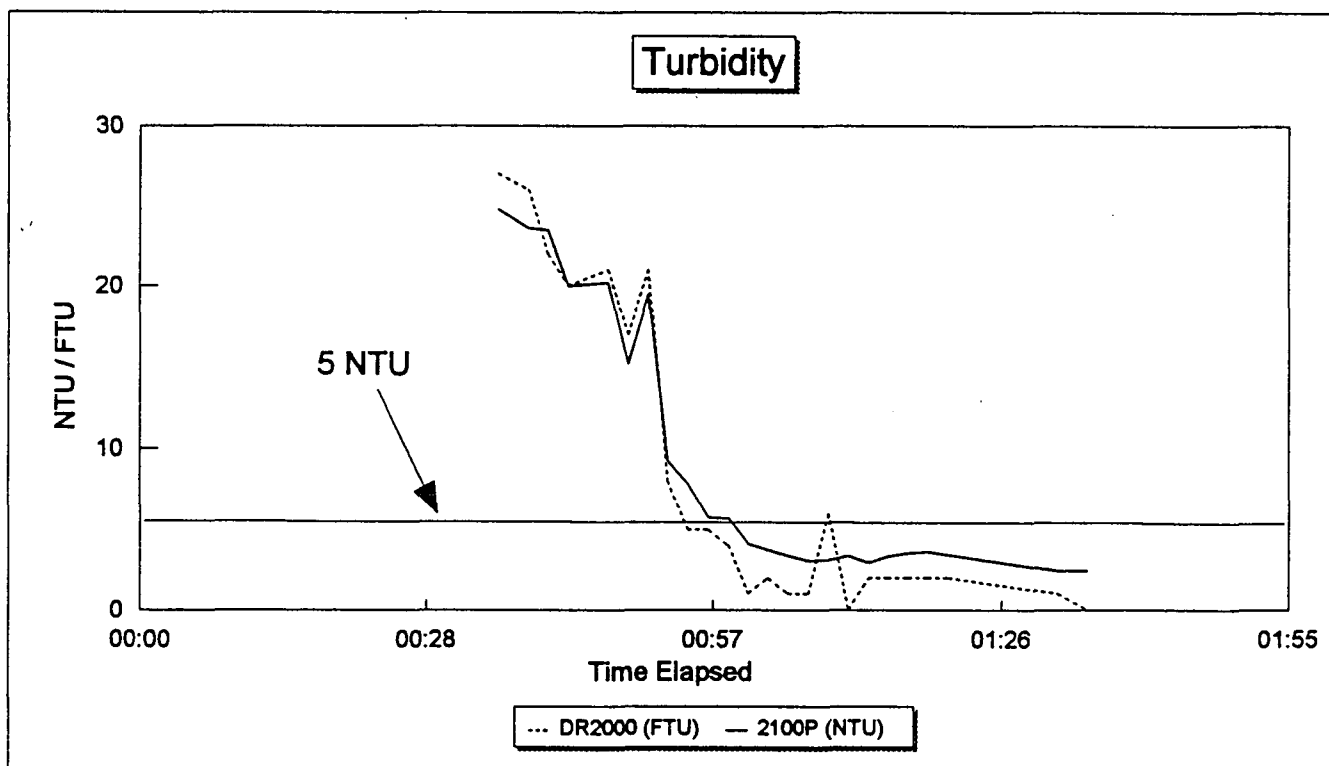
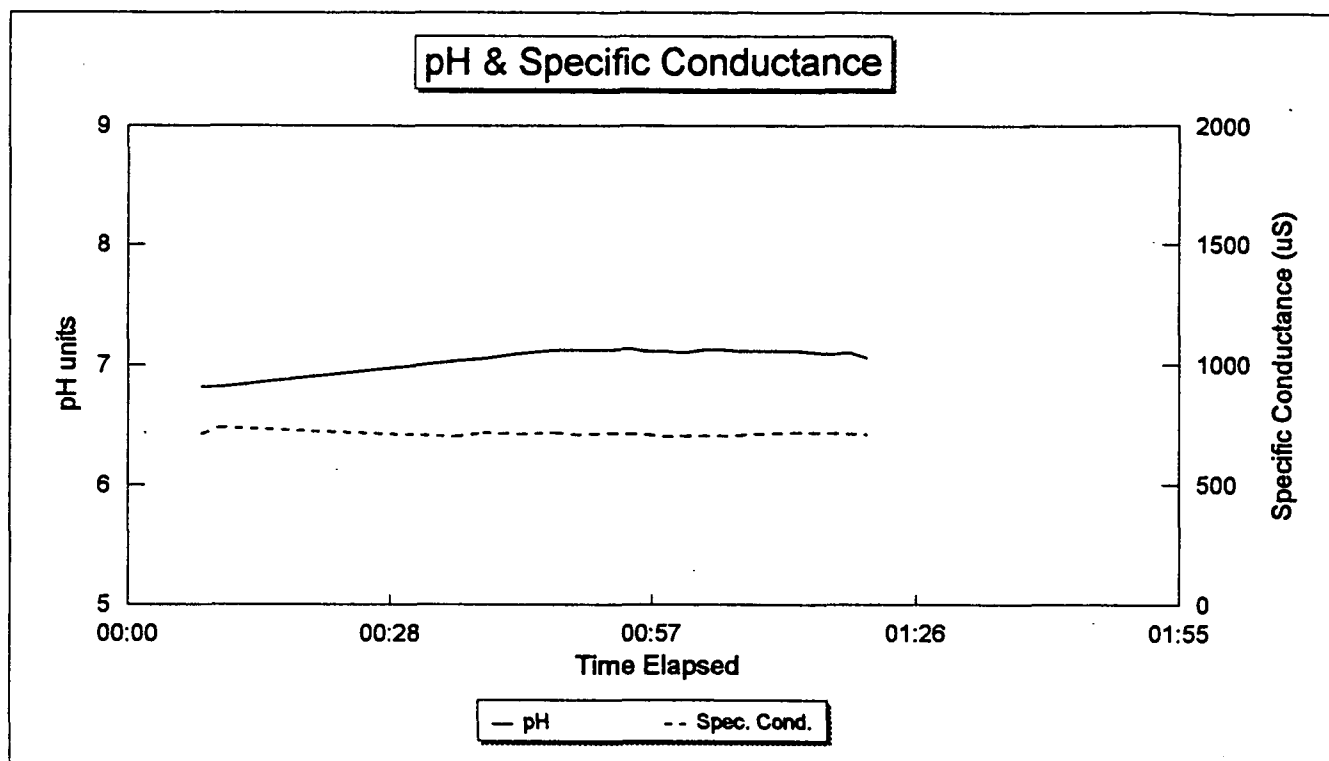
Dissolved Oxygen & Redox Potential



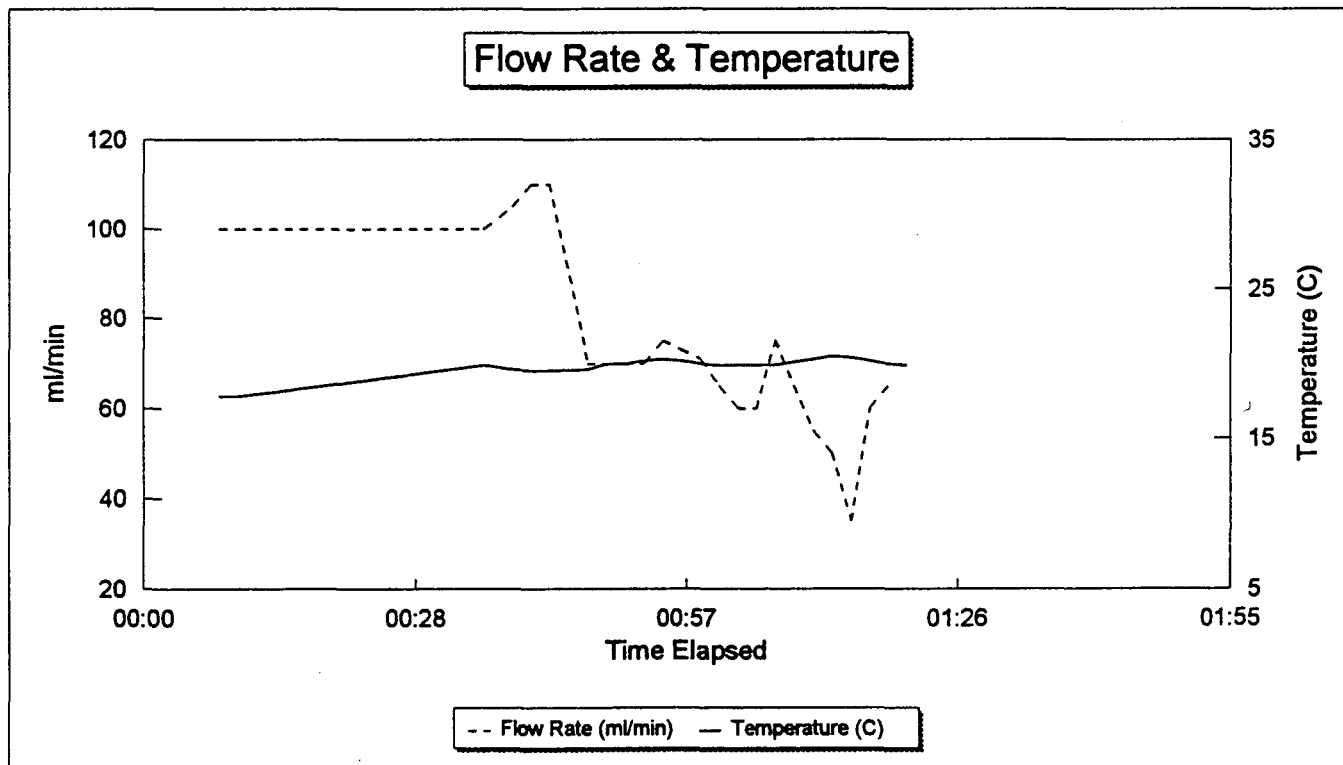
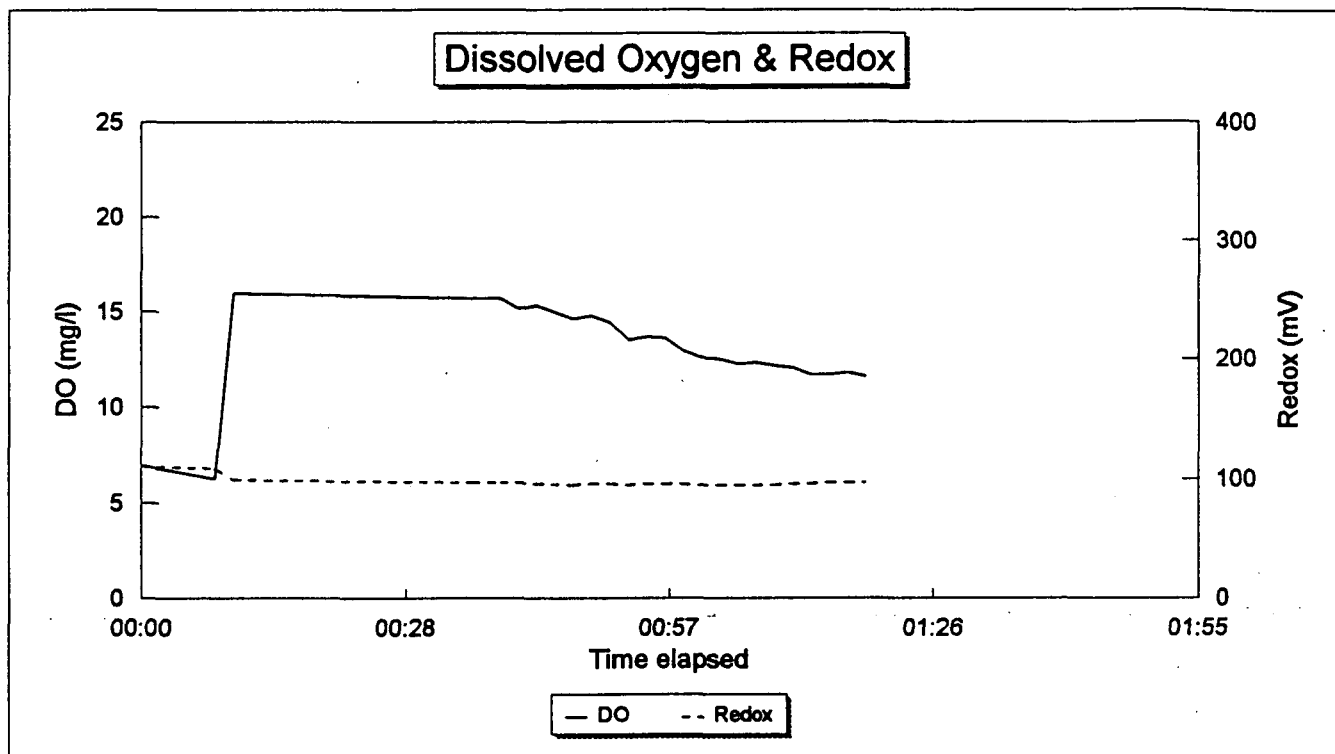
Flow Rate & Temperature



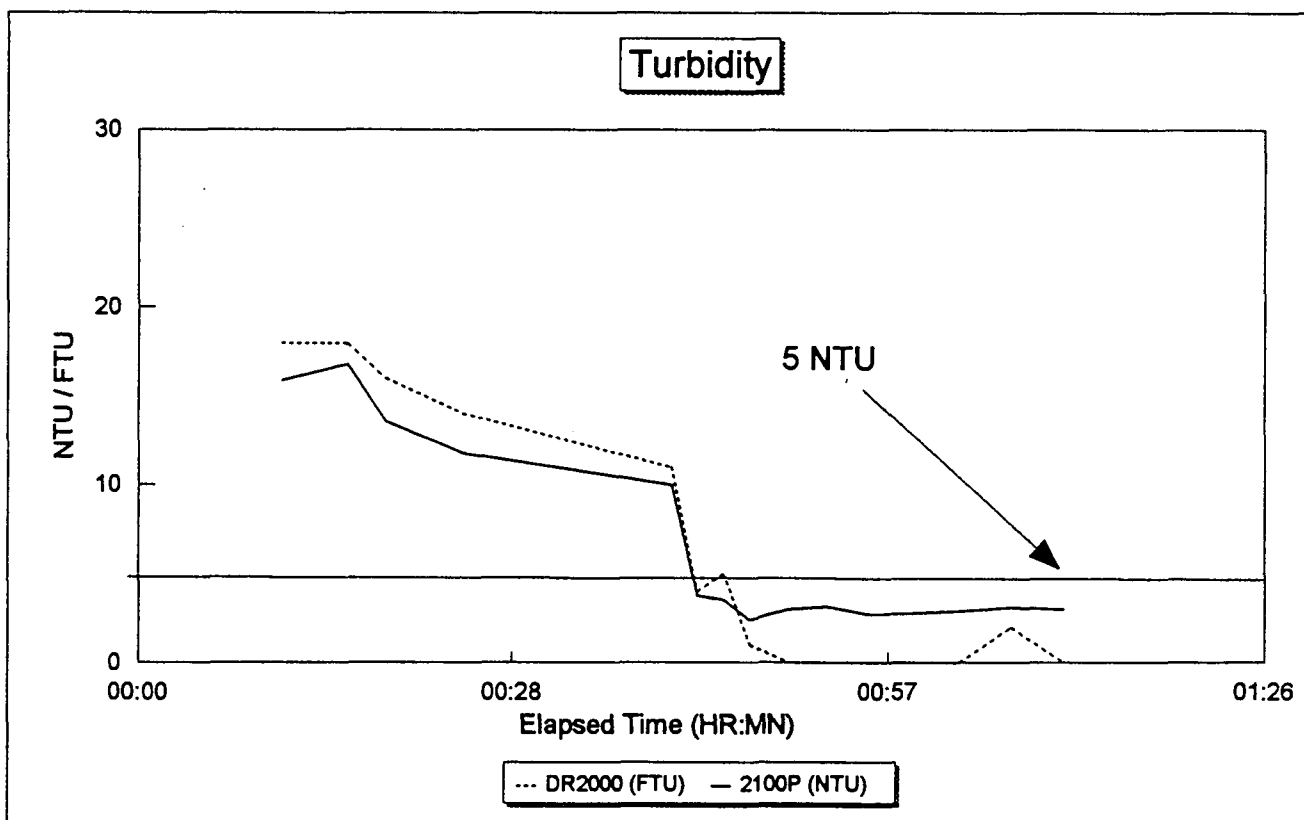
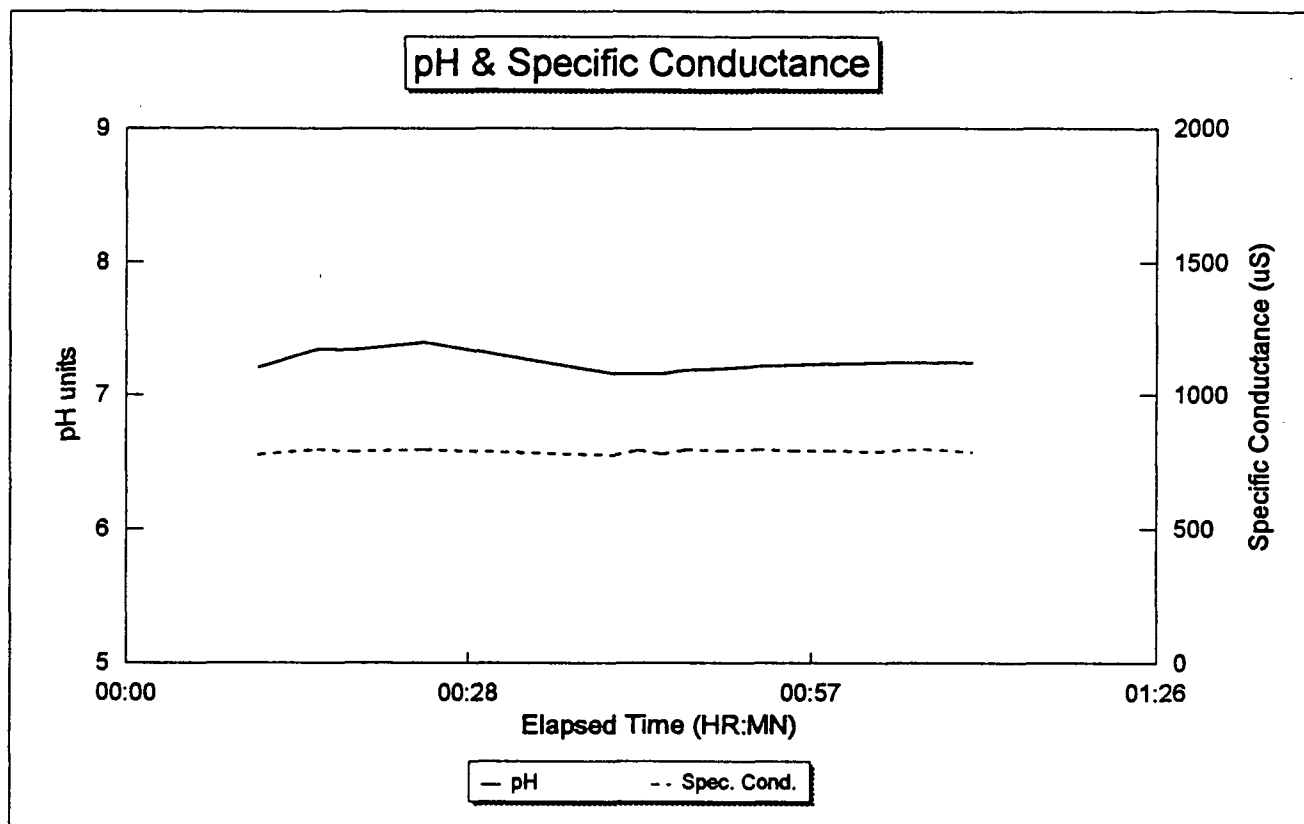
Field Parameter Data - Well 20591- Test D
Pump: QED Well Wizard - Instrumentation: QED Purge-Saver



Field Parameter Data - Well 20591- Test D
Pump: QED Well Wizard - Instrumentation: QED Purge-Saver

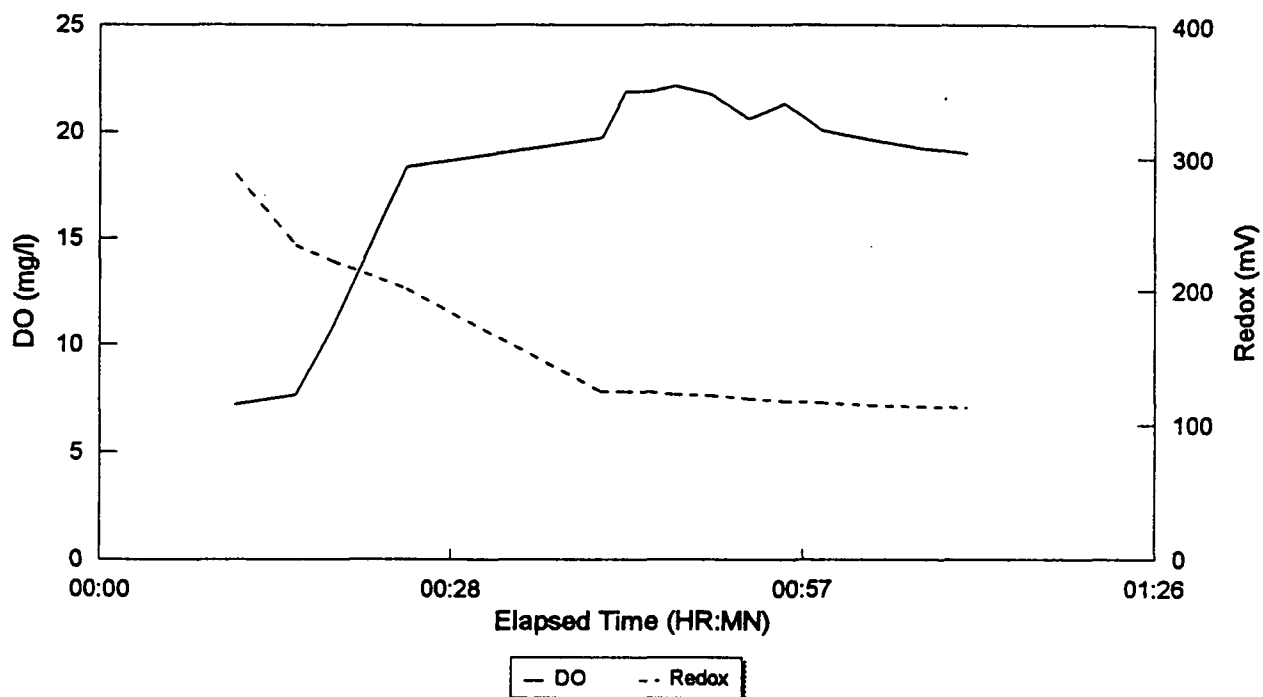


Field Parameter Data - Well 20591 - Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver

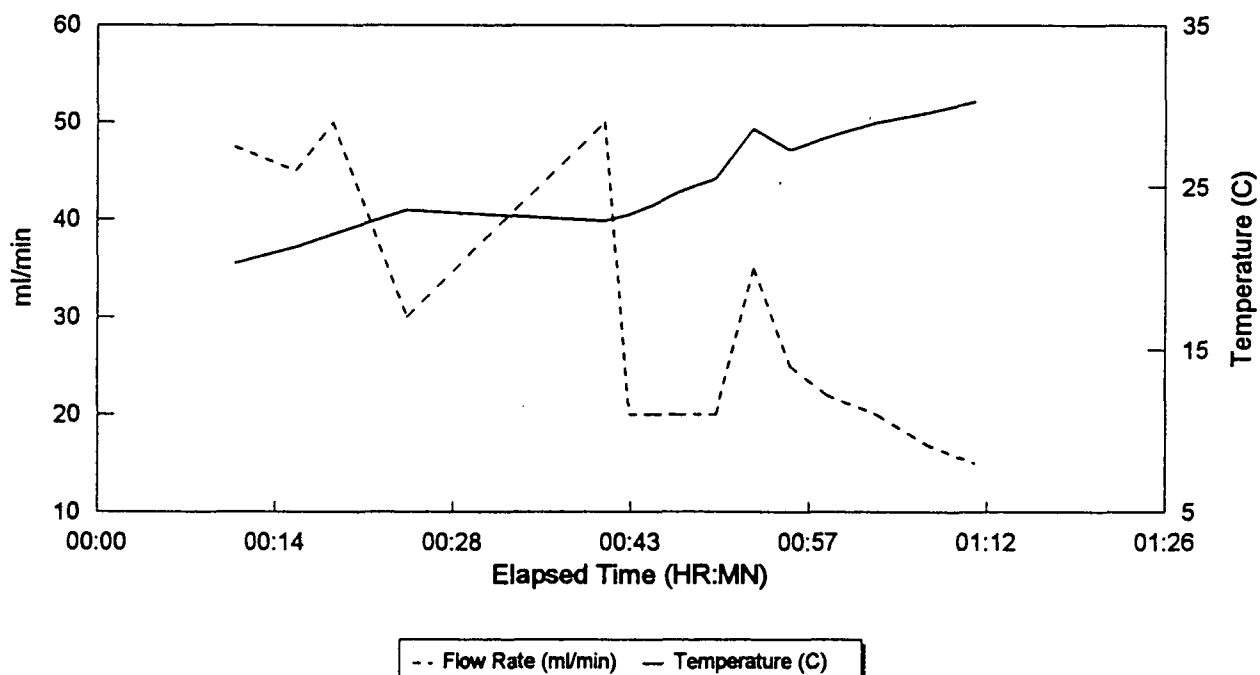


Field Parameter Data - Well 20591 - Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver

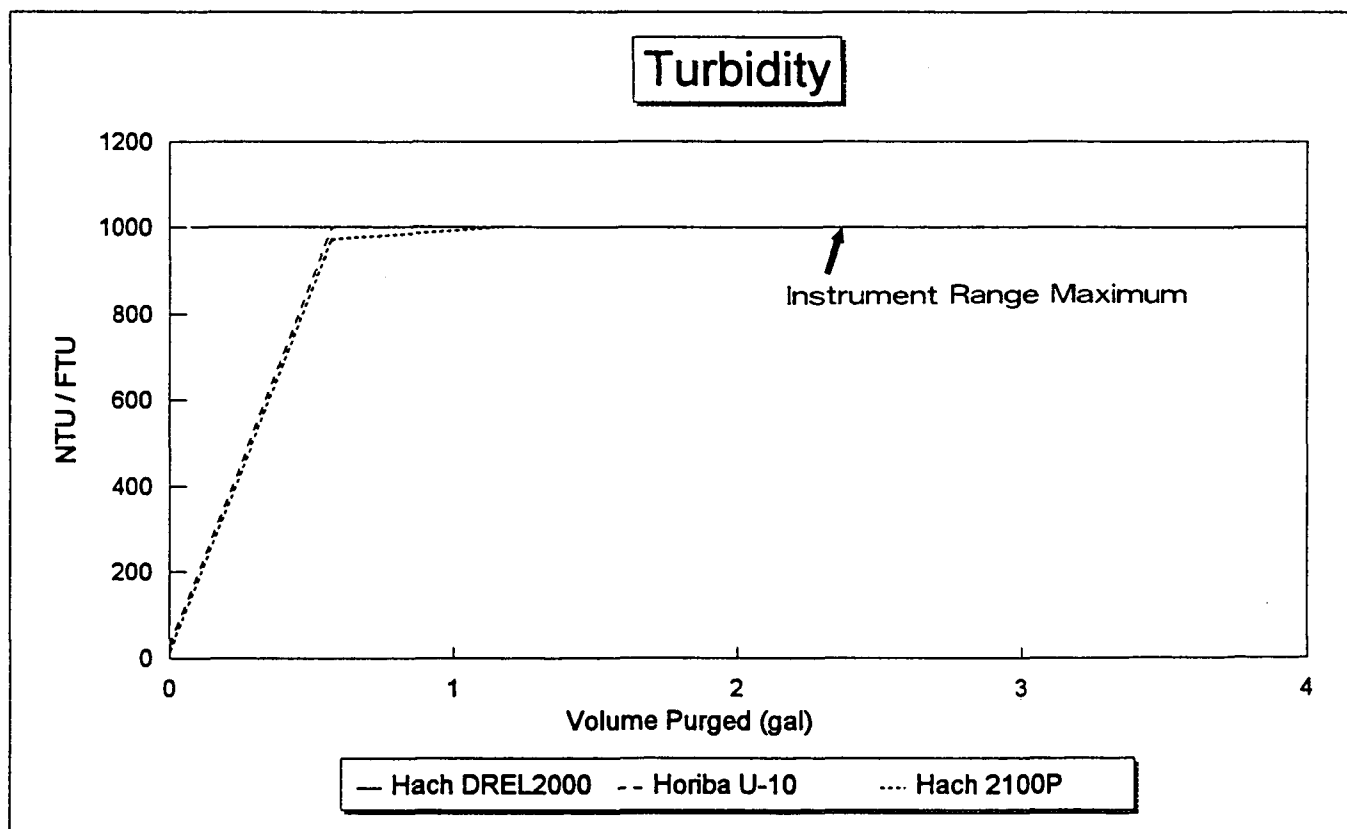
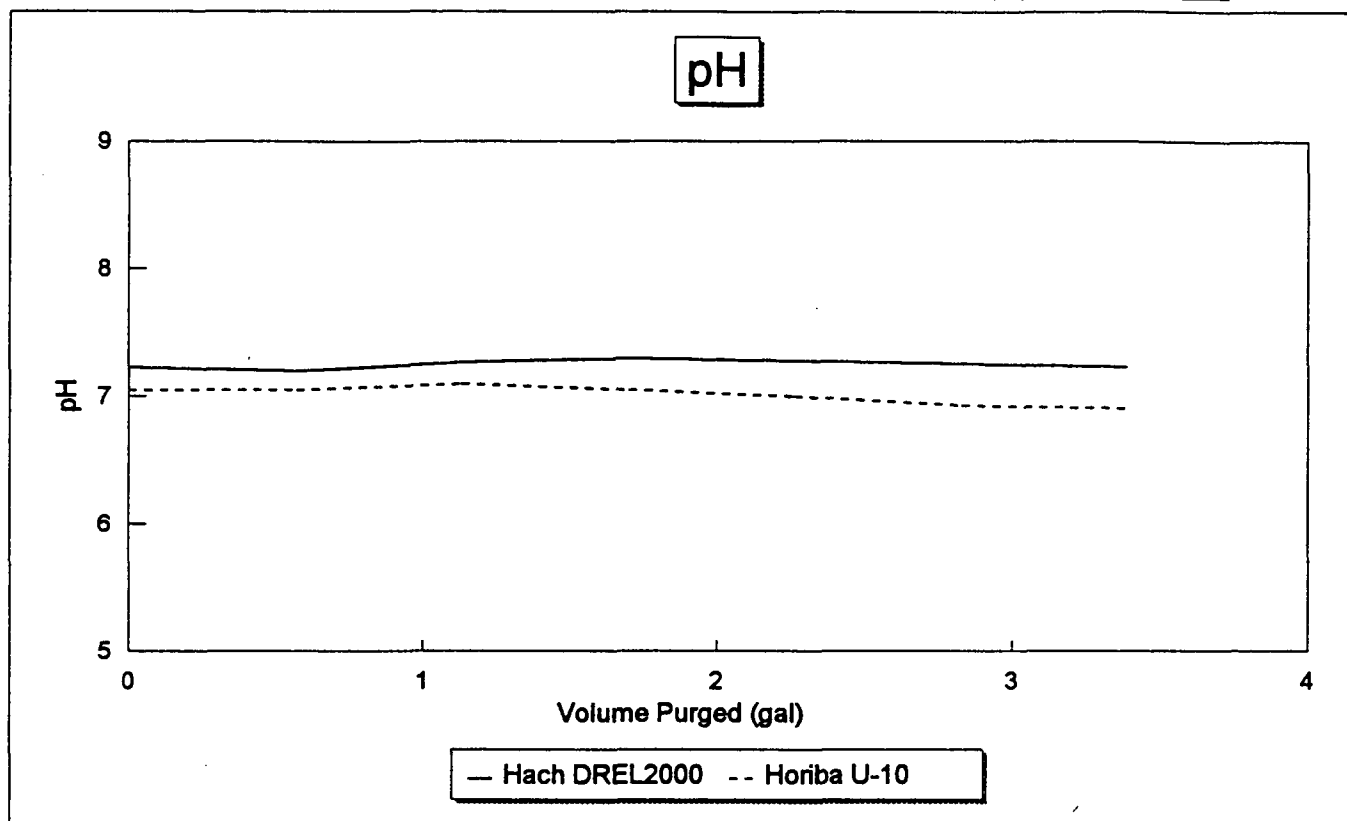
Dissolved Oxygen & Redox Potential



Flow Rate & Temperature

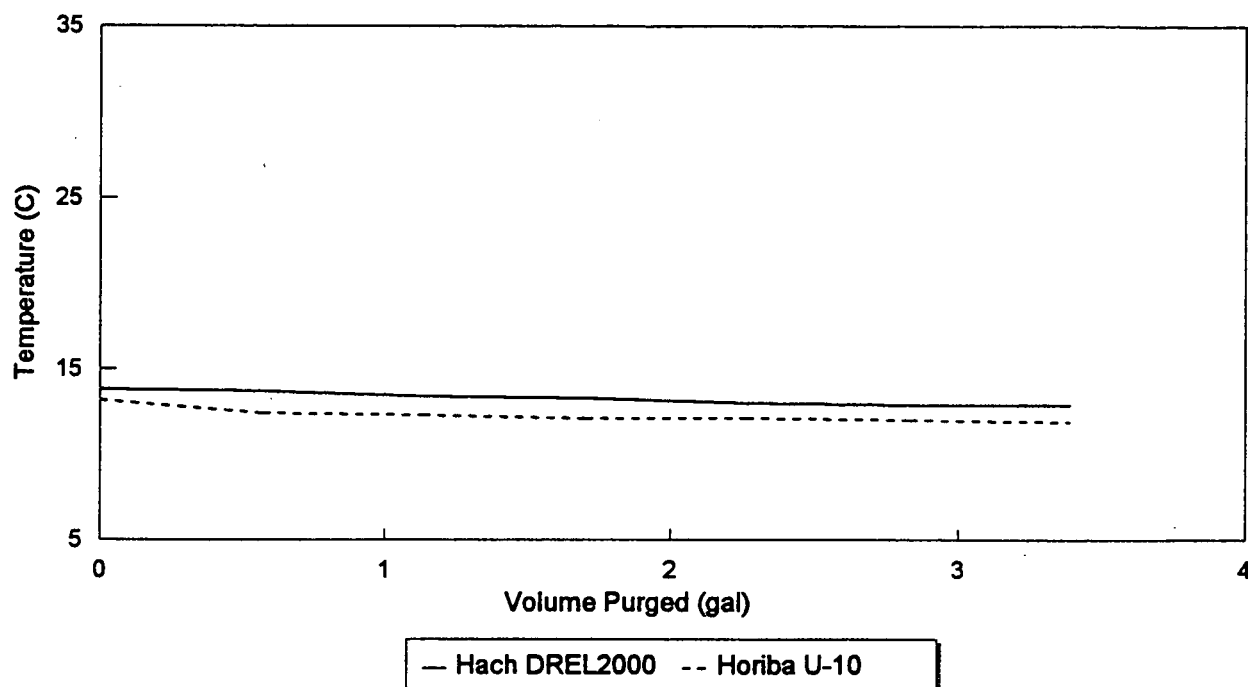


Field Parameter Data - Well 20591 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

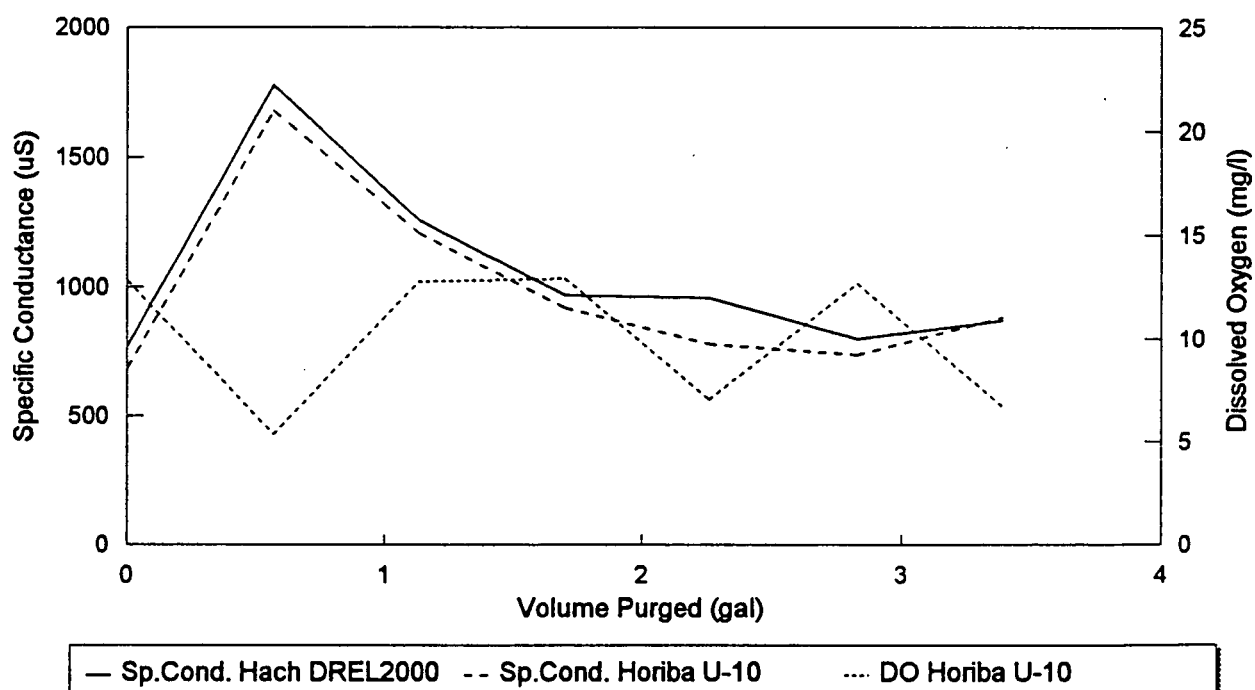


Field Parameter Data - Well 20591 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

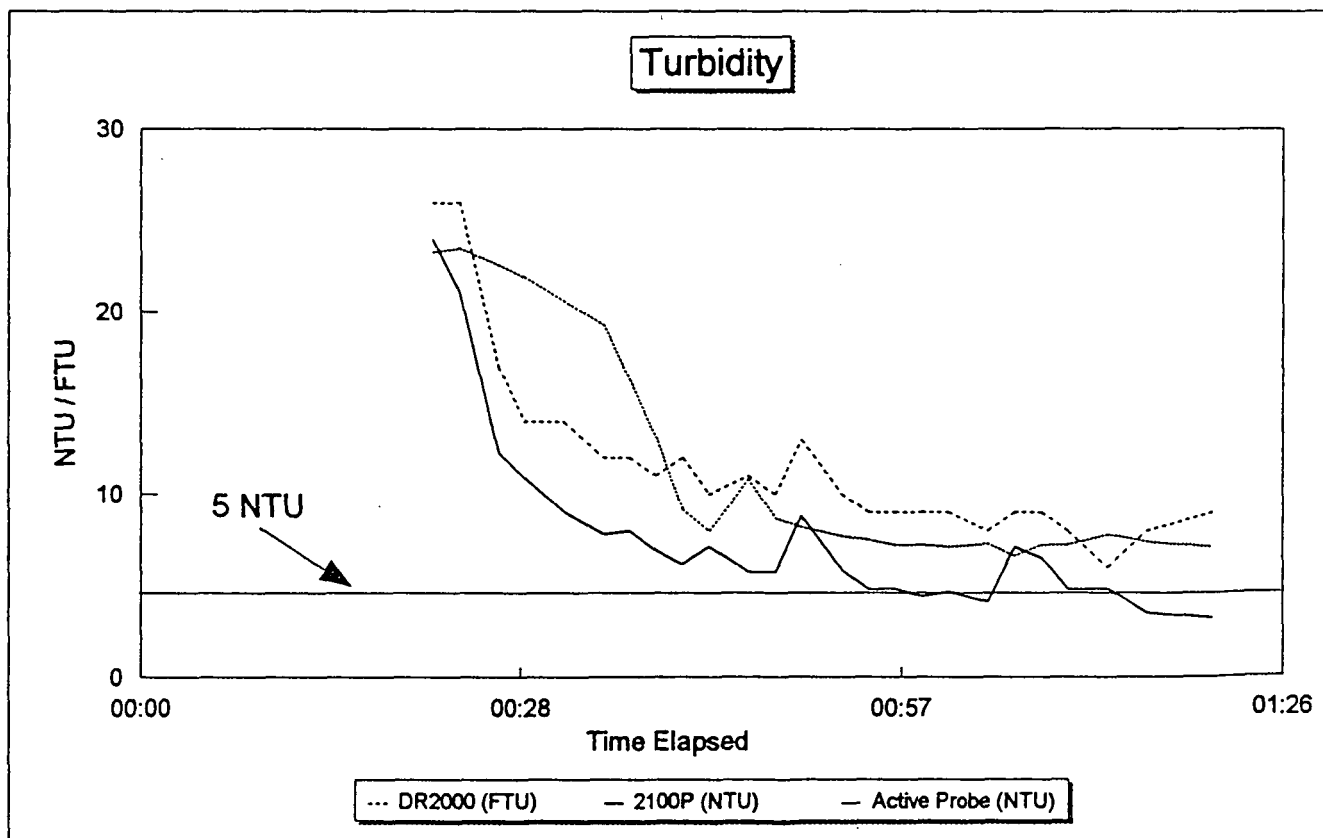
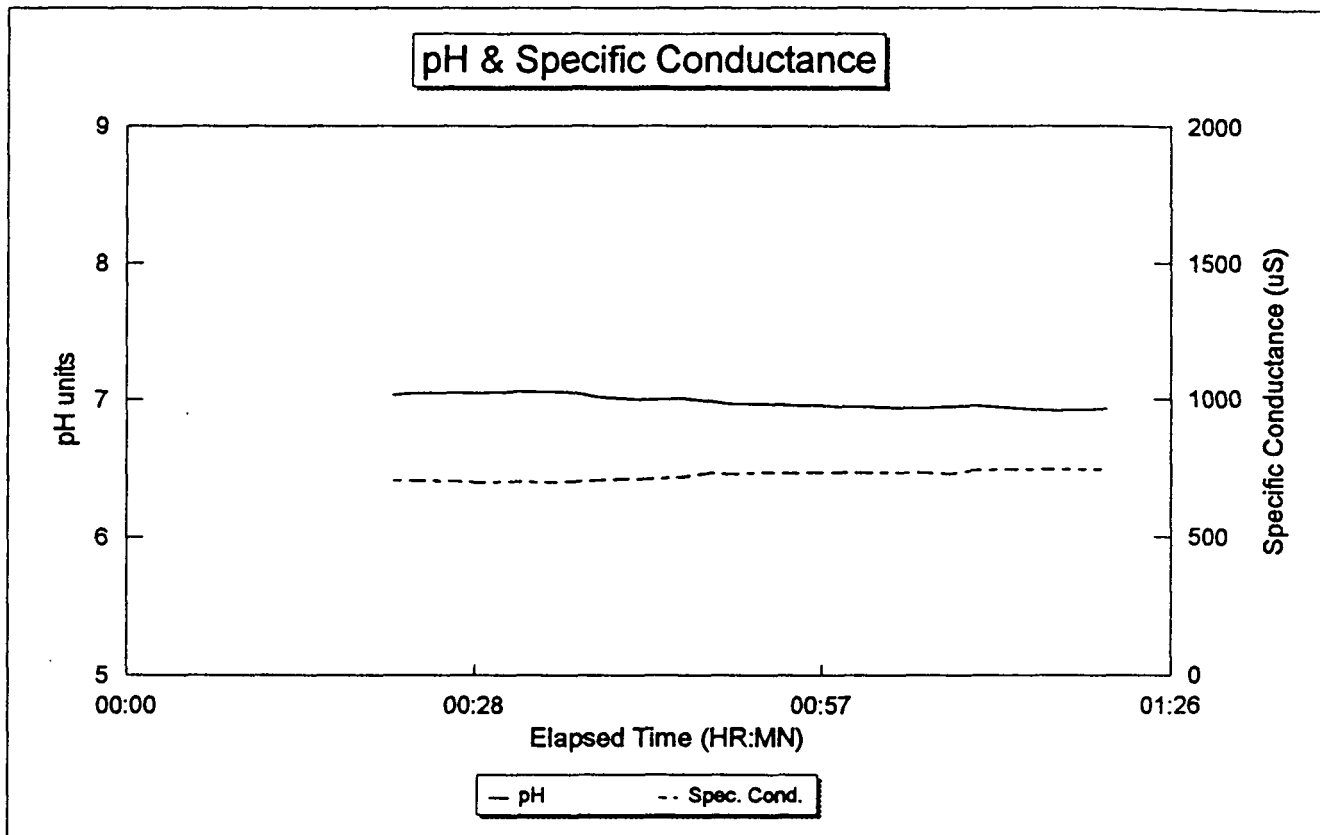
Temperature



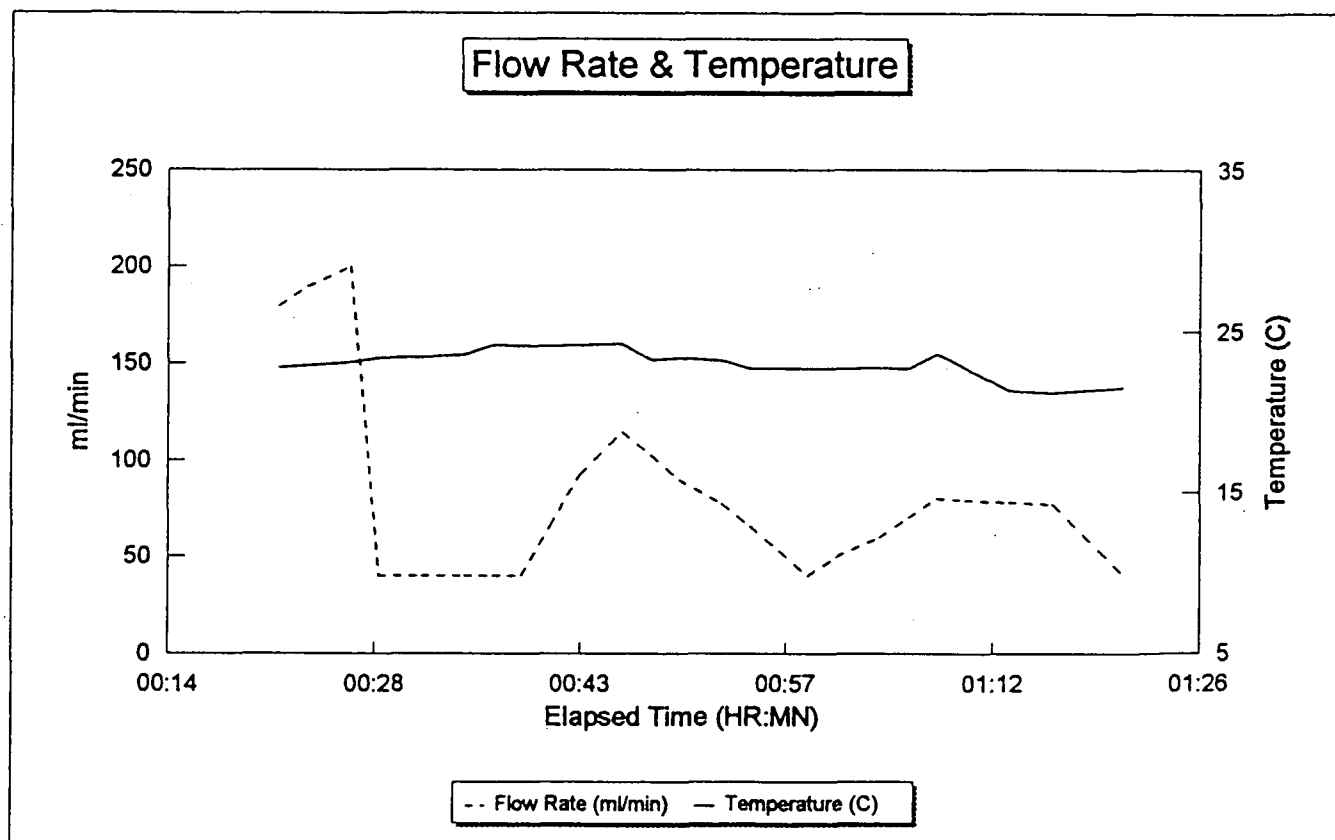
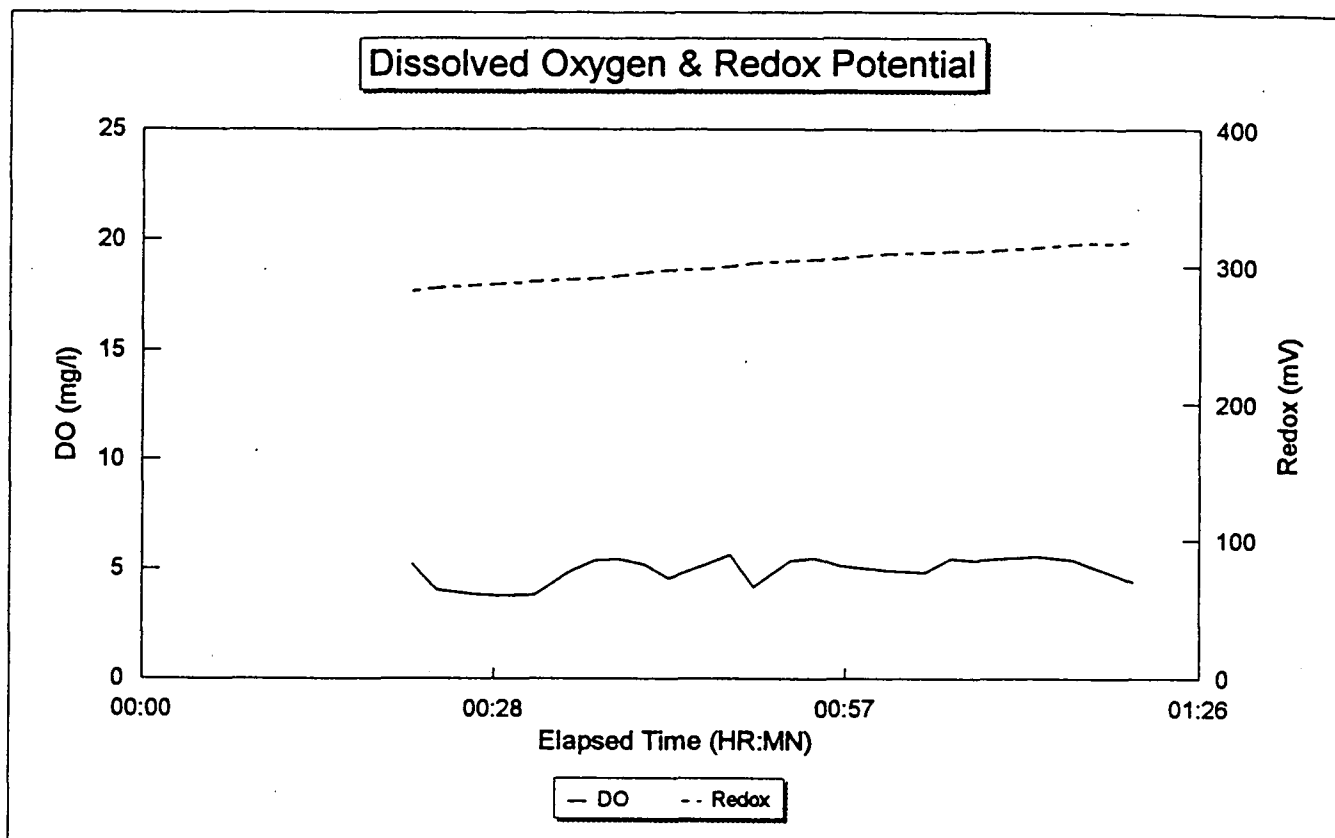
Specific Conductance & Dissolved Oxygen



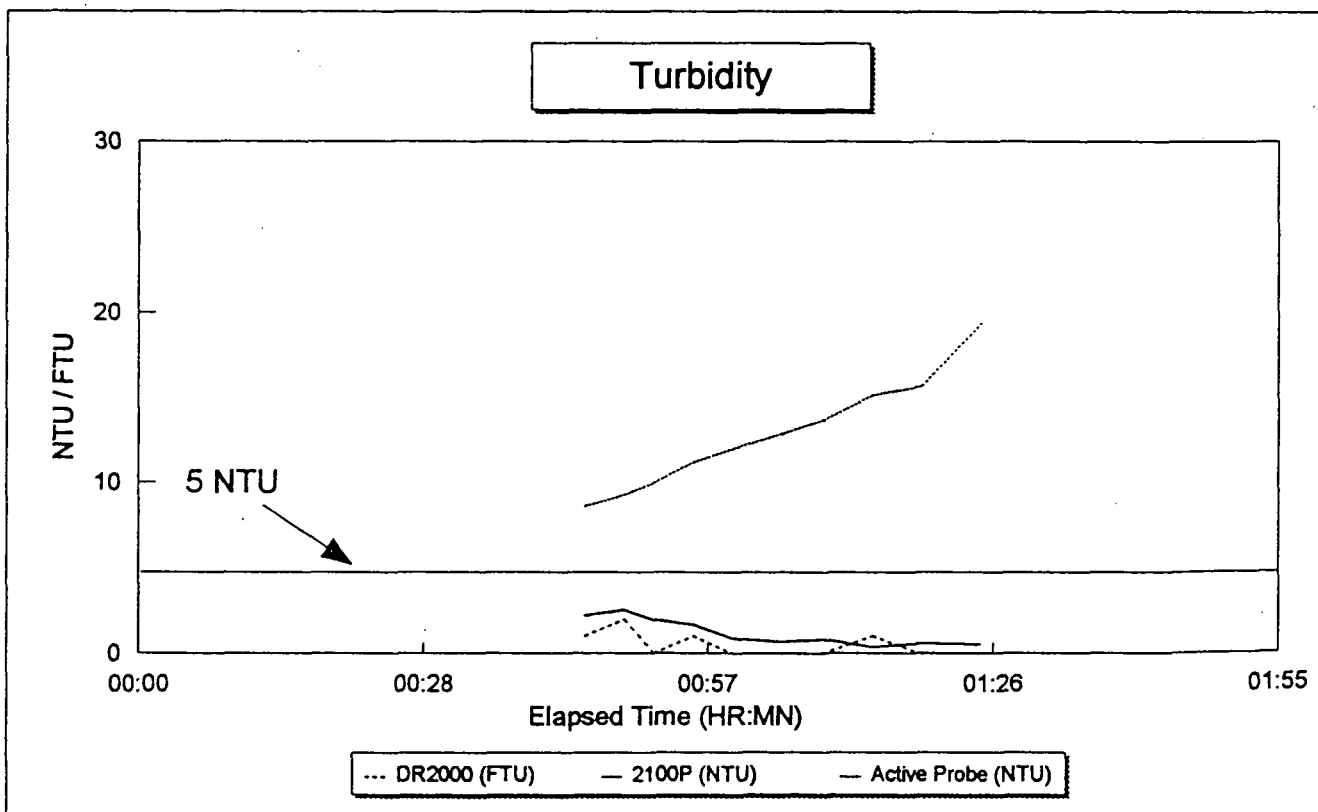
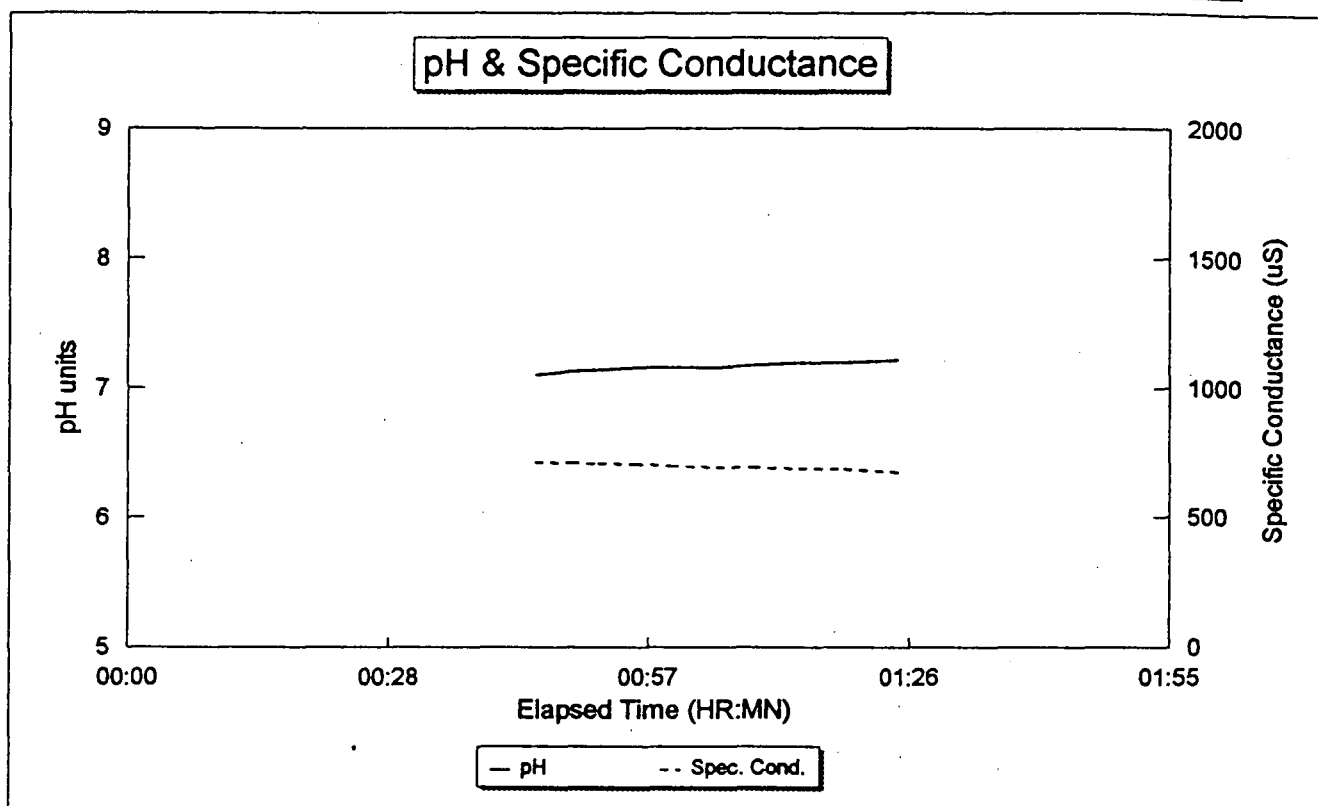
Field Parameter Data - Well 20591 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20



Field Parameter Data - Well 20591 - Test A
Pump: ISCO Bladder Pump - Instrumentation: Hydrolab H20

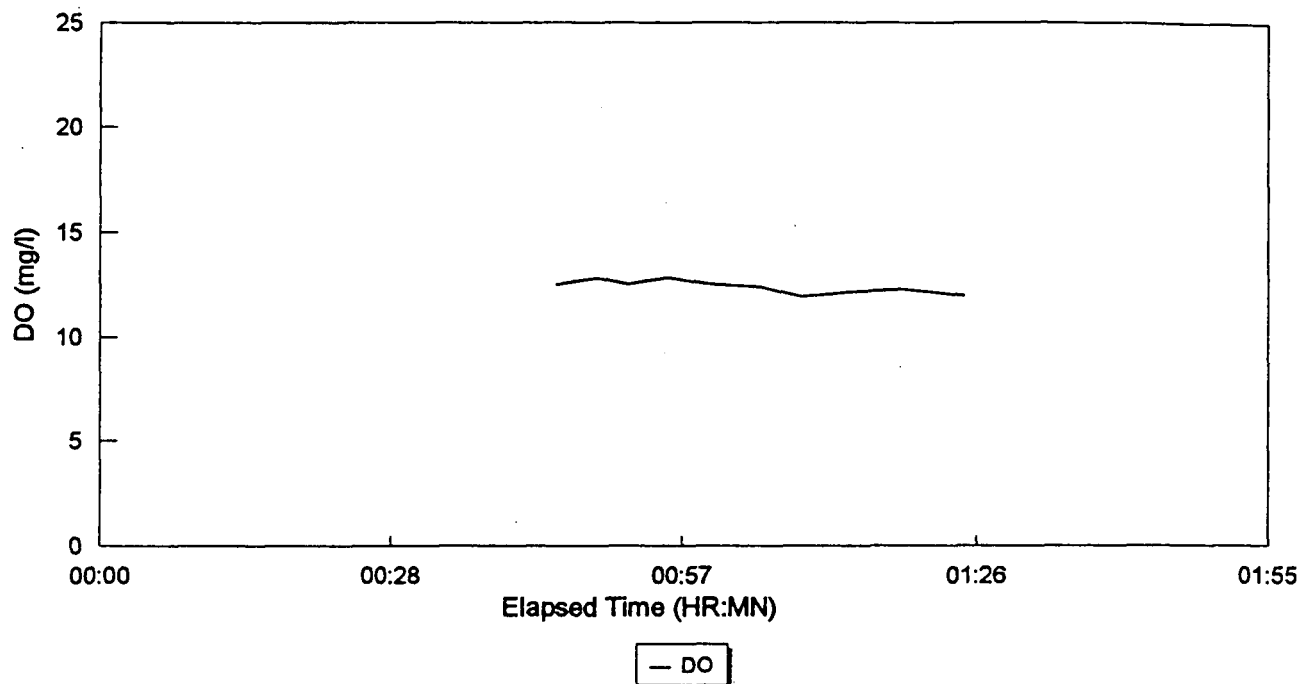


Field Parameter Data - Well 20591- Test B
Pump: Marschalk Bladder Pump - Instrumentation: Solomat

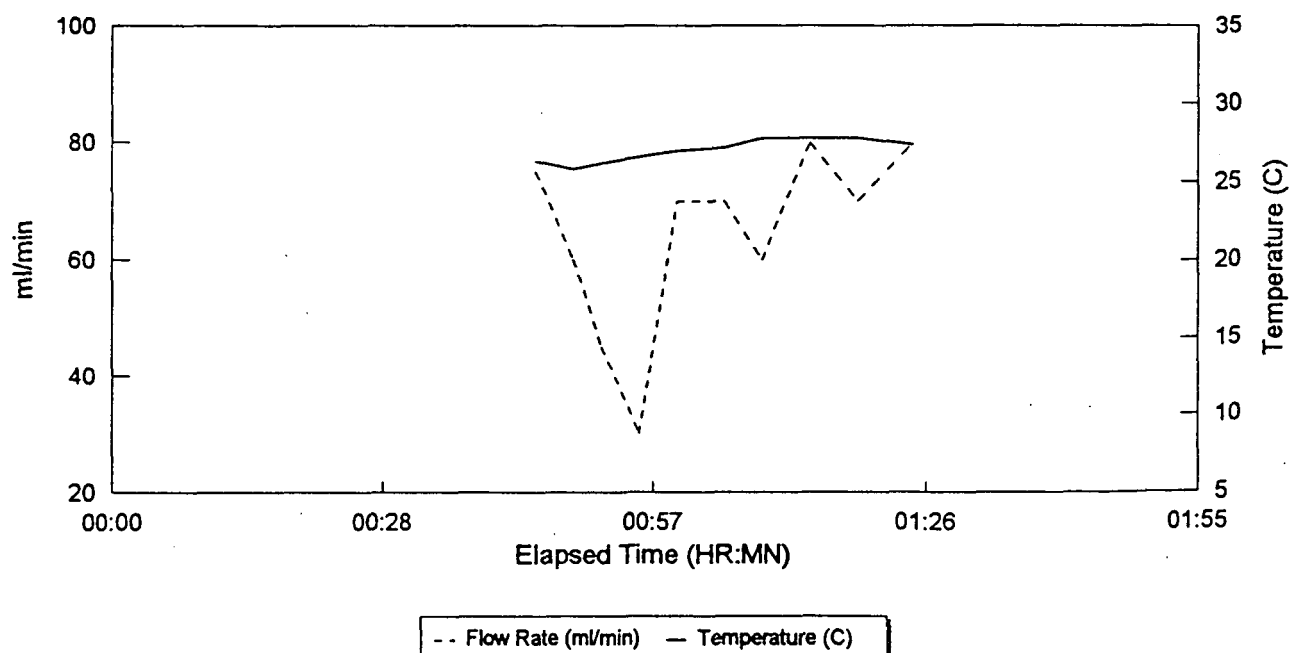


Field Parameter Data - Well 20591- Test B
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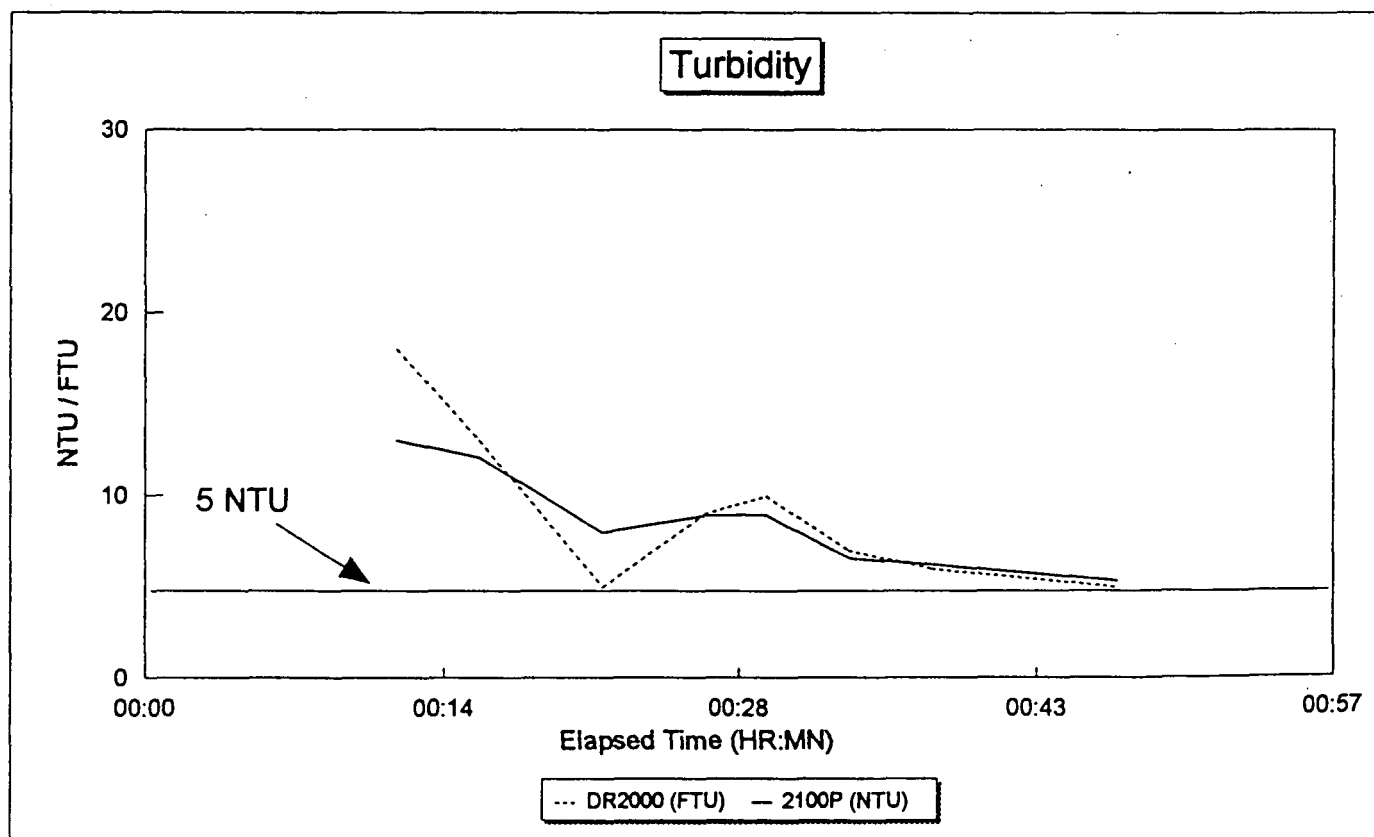
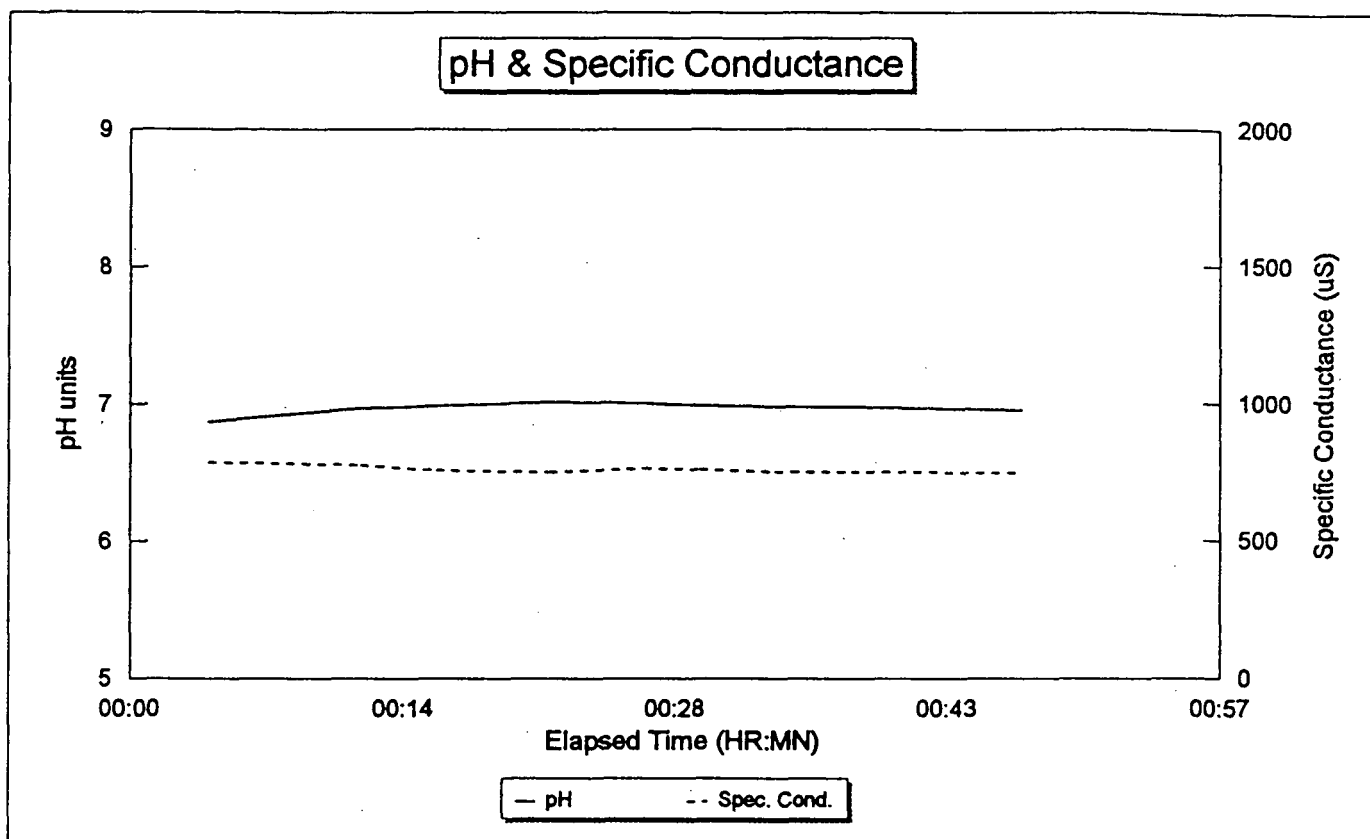
Dissolved Oxygen



Flow Rate & Temperature

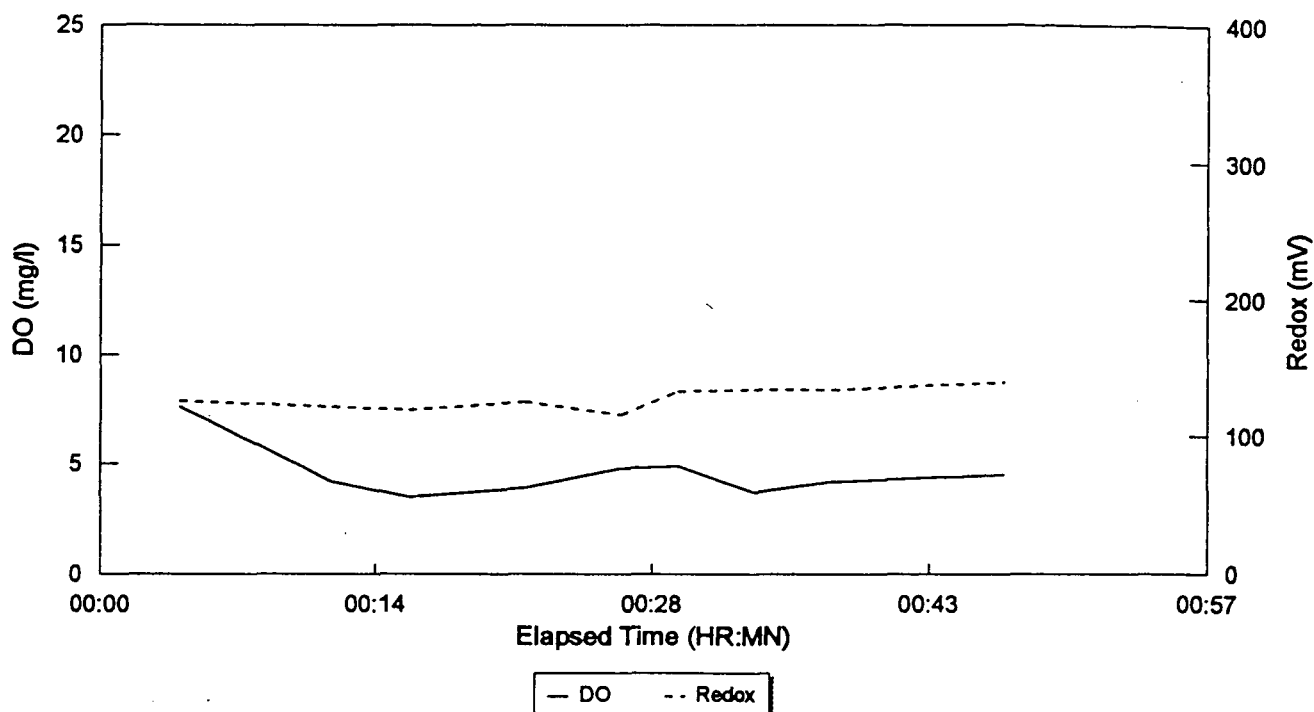


Field Parameter Data - Well 20591 - Test C
Pump: Grundfos - Instrumentation: Orion/Geotech Flow Cell

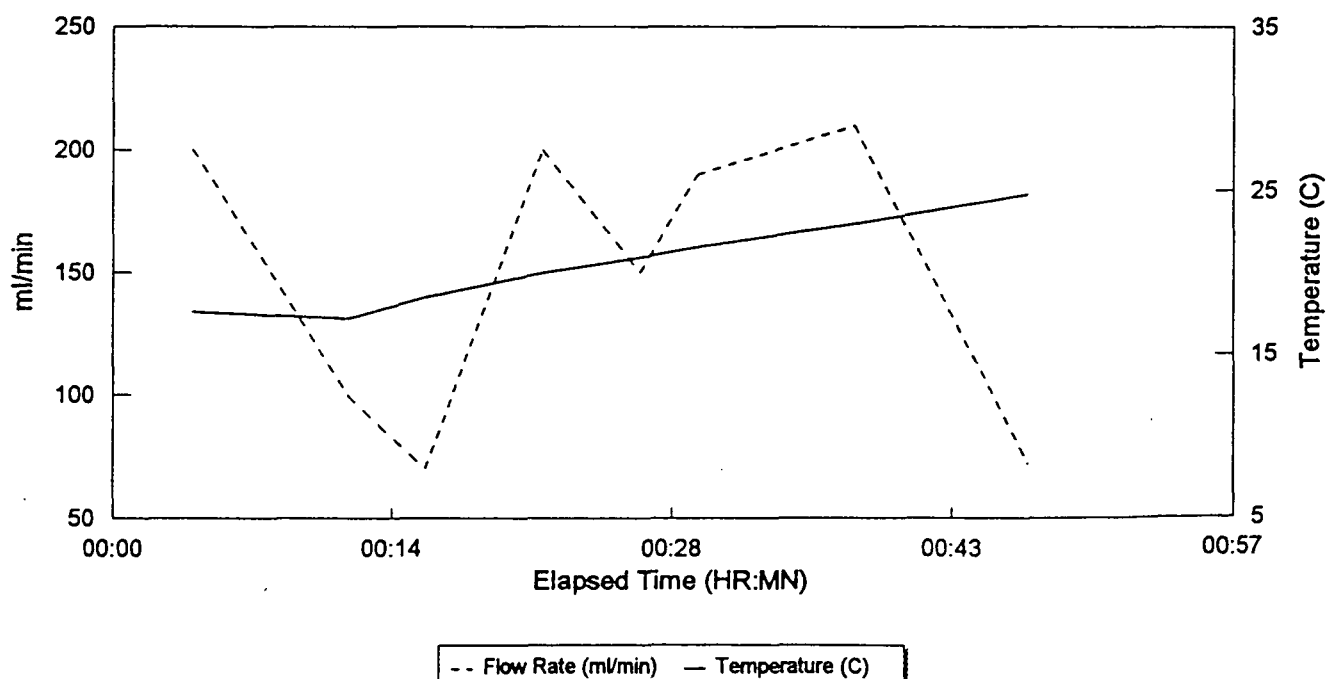


Field Parameter Data - Well 20591- Test C
Pump: Grundfos - Instrumentation: Orion/Geotech Flow Cell

Dissolved Oxygen & Redox Potential

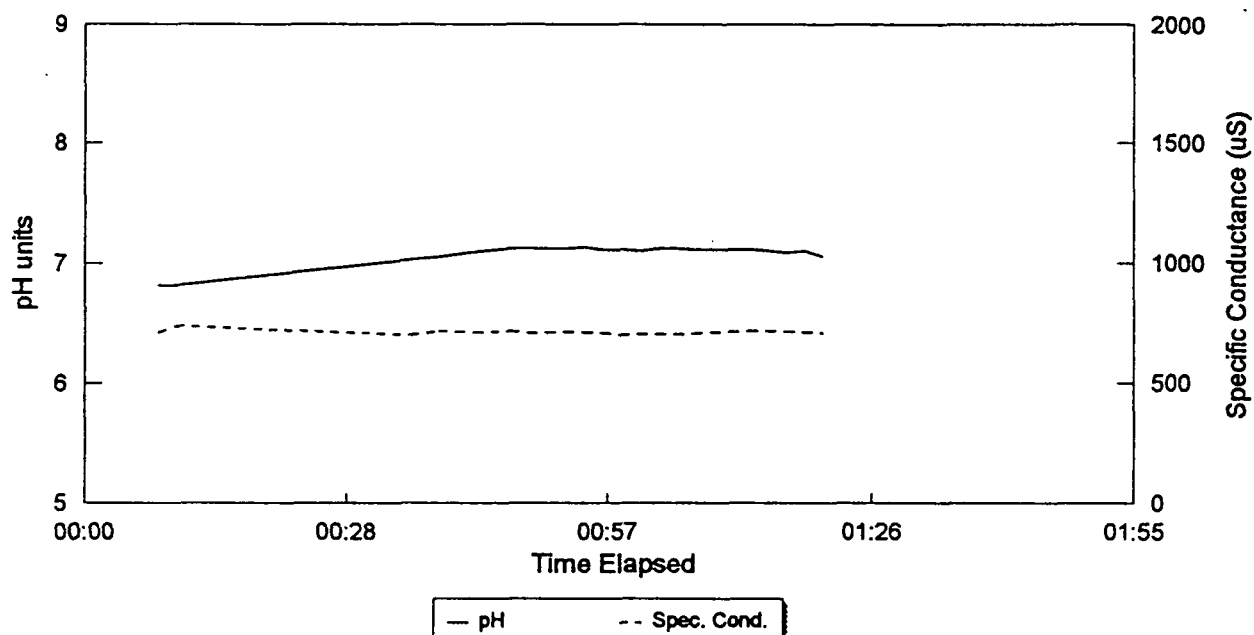


Flow Rate & Temperature

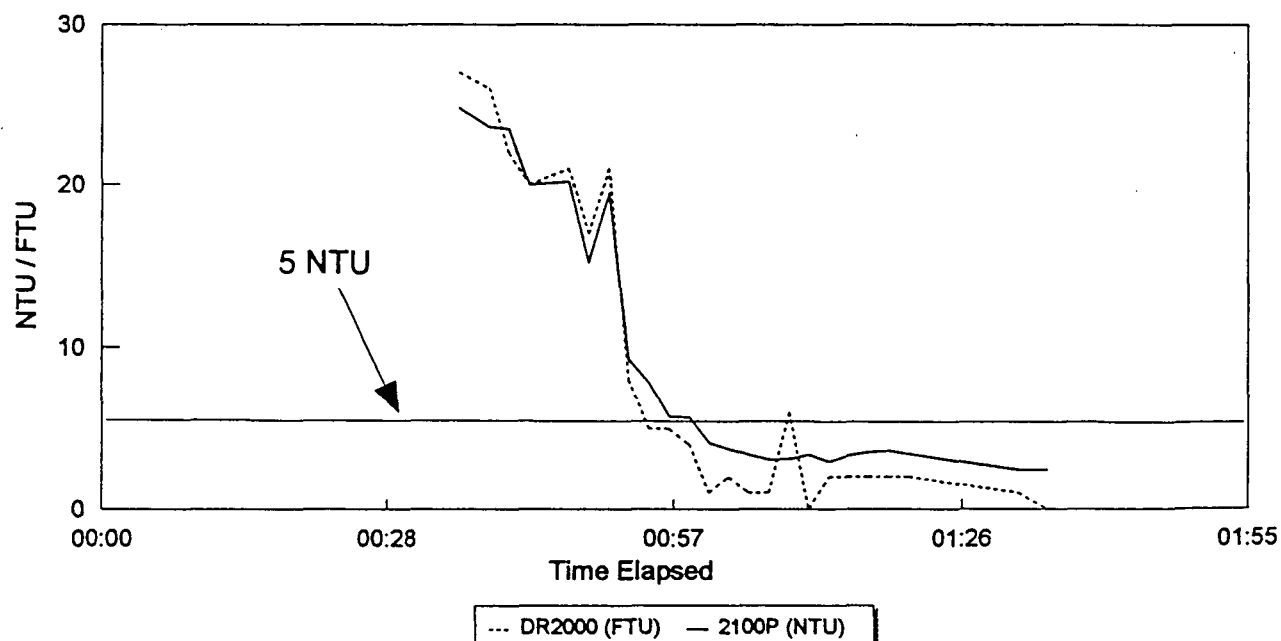


Field Parameter Data - Well 20591- Test D
Pump: QED Well Wizard - Instrumentation: QED Purge-Saver

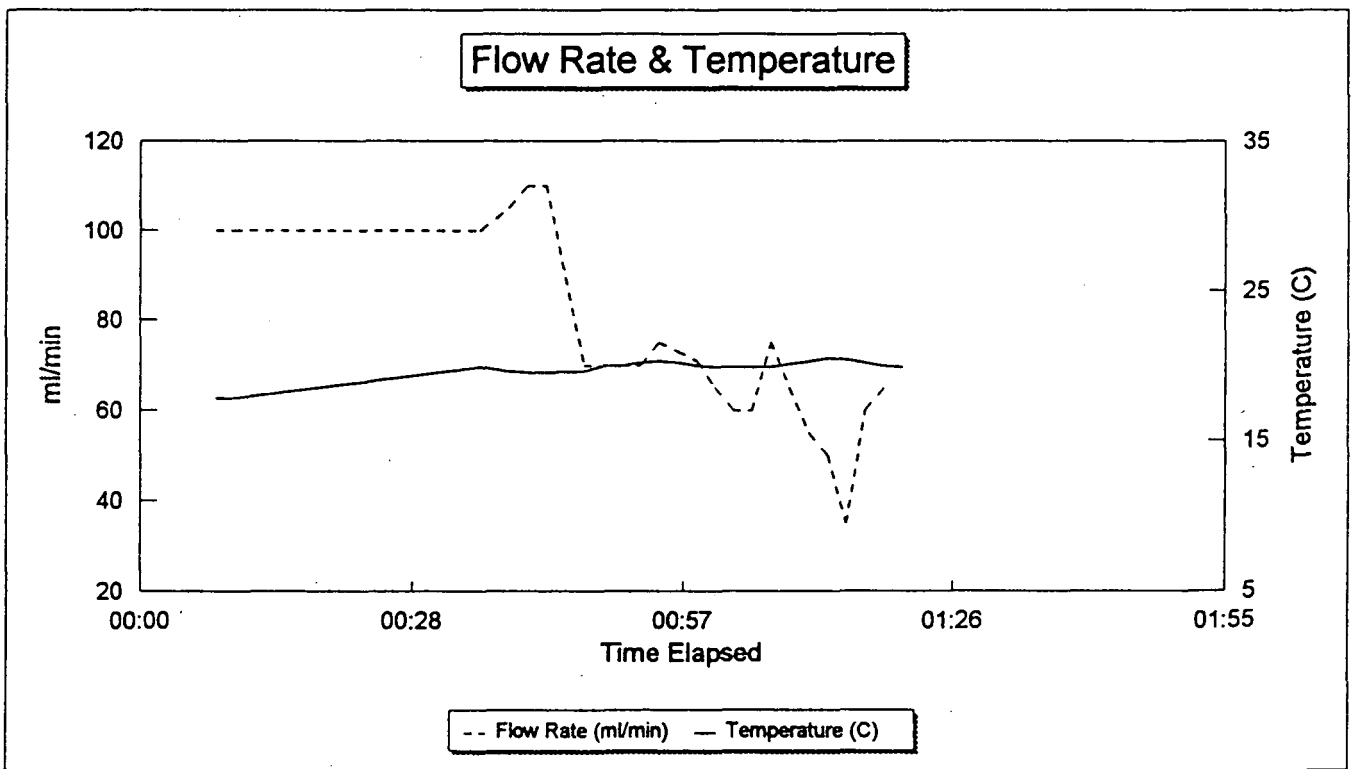
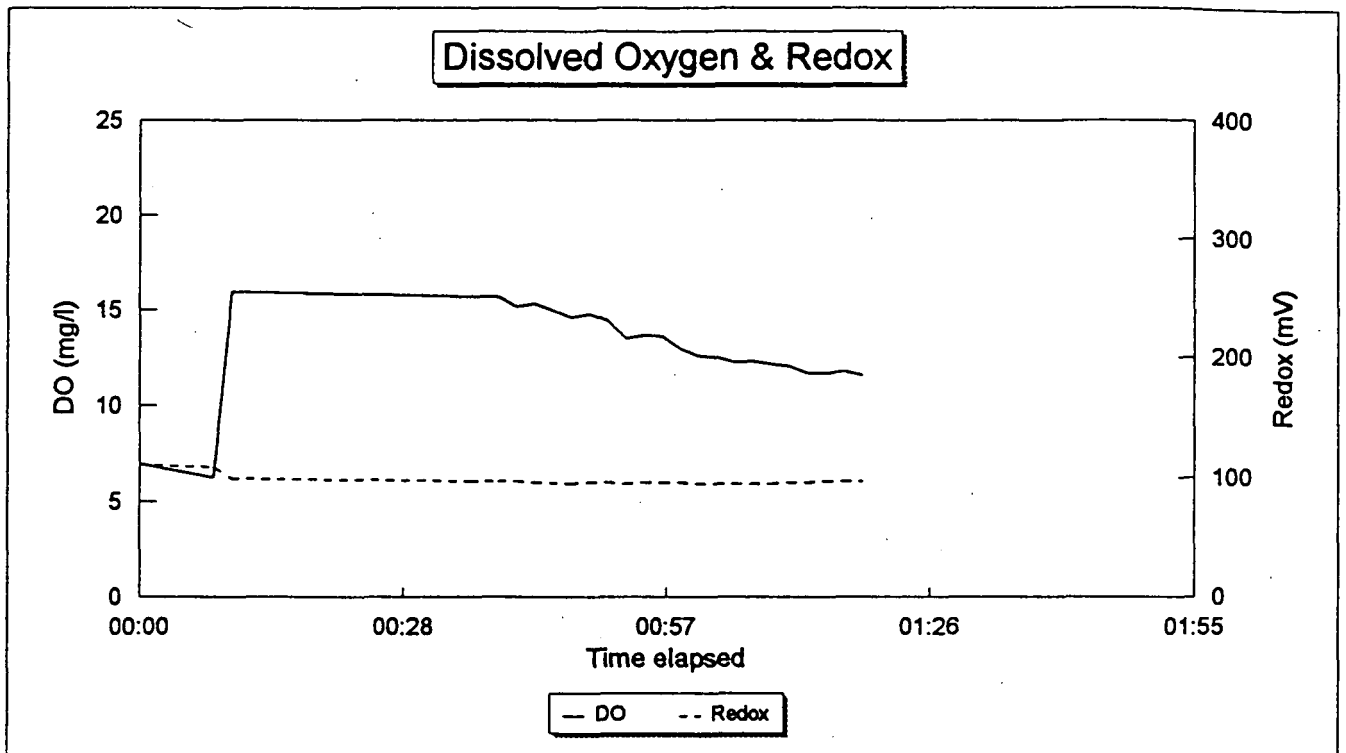
pH & Specific Conductance



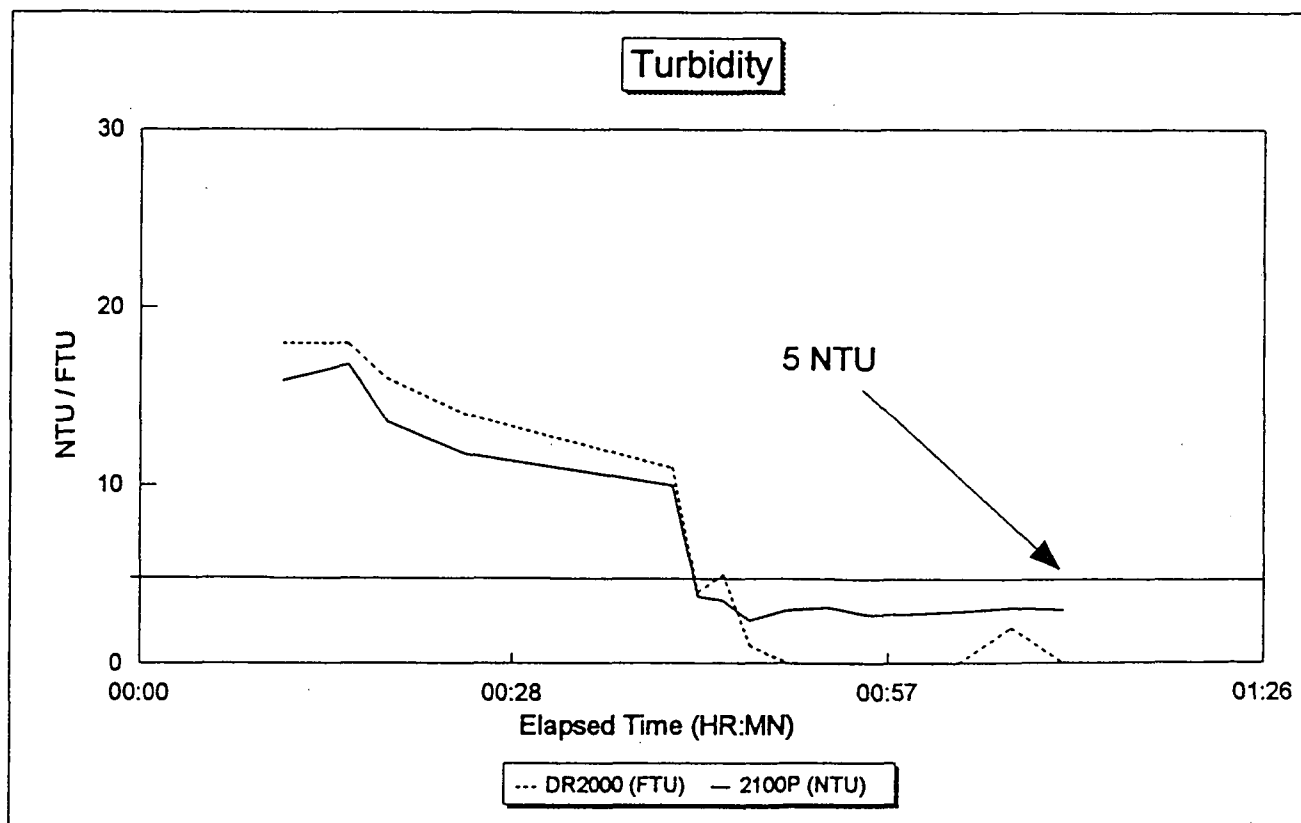
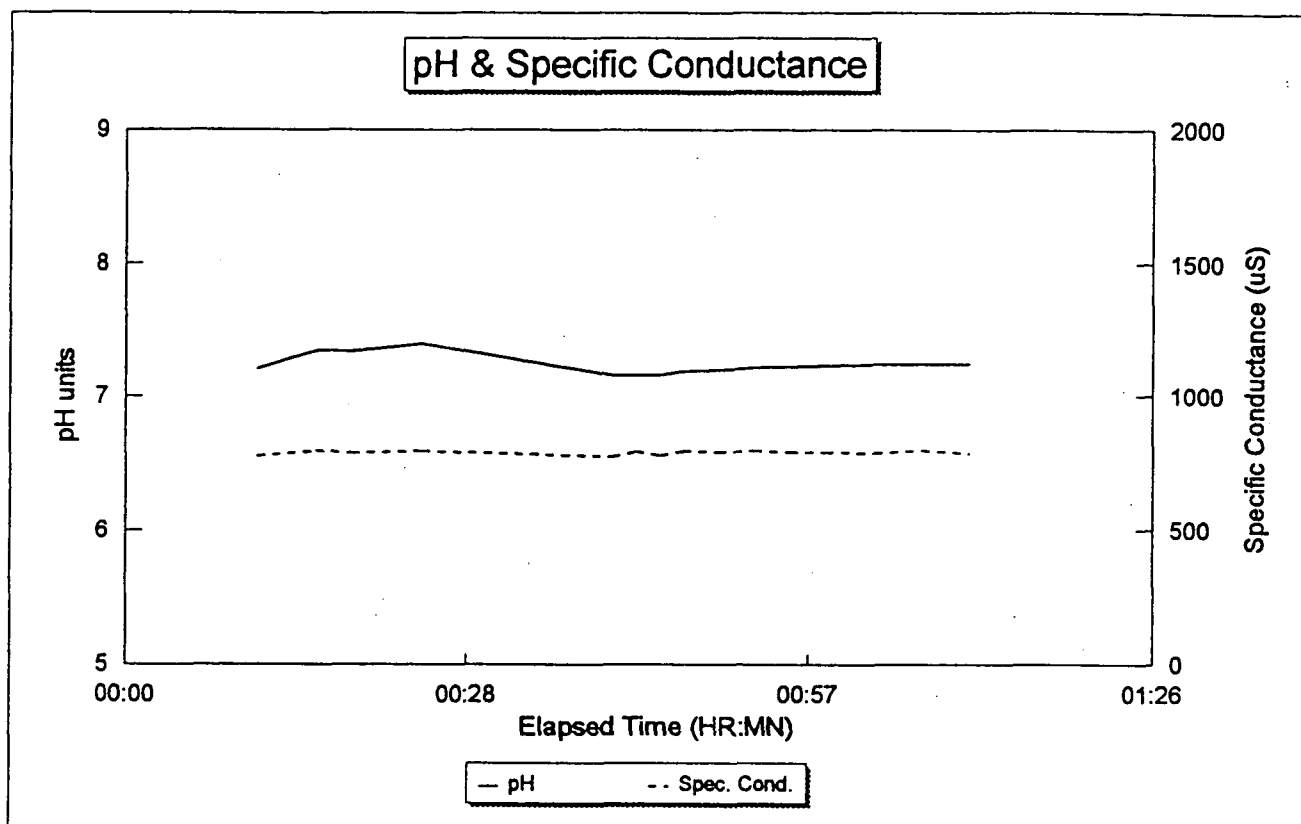
Turbidity



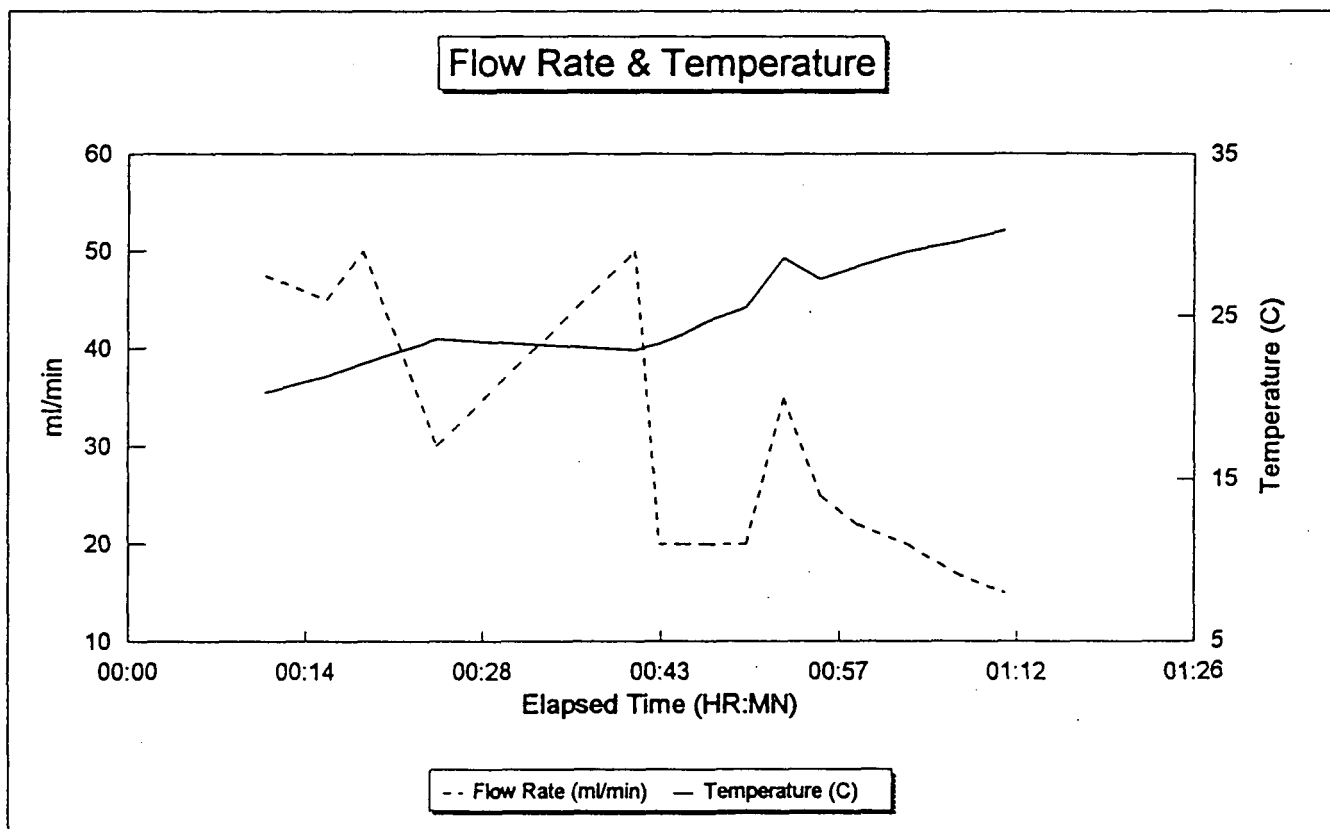
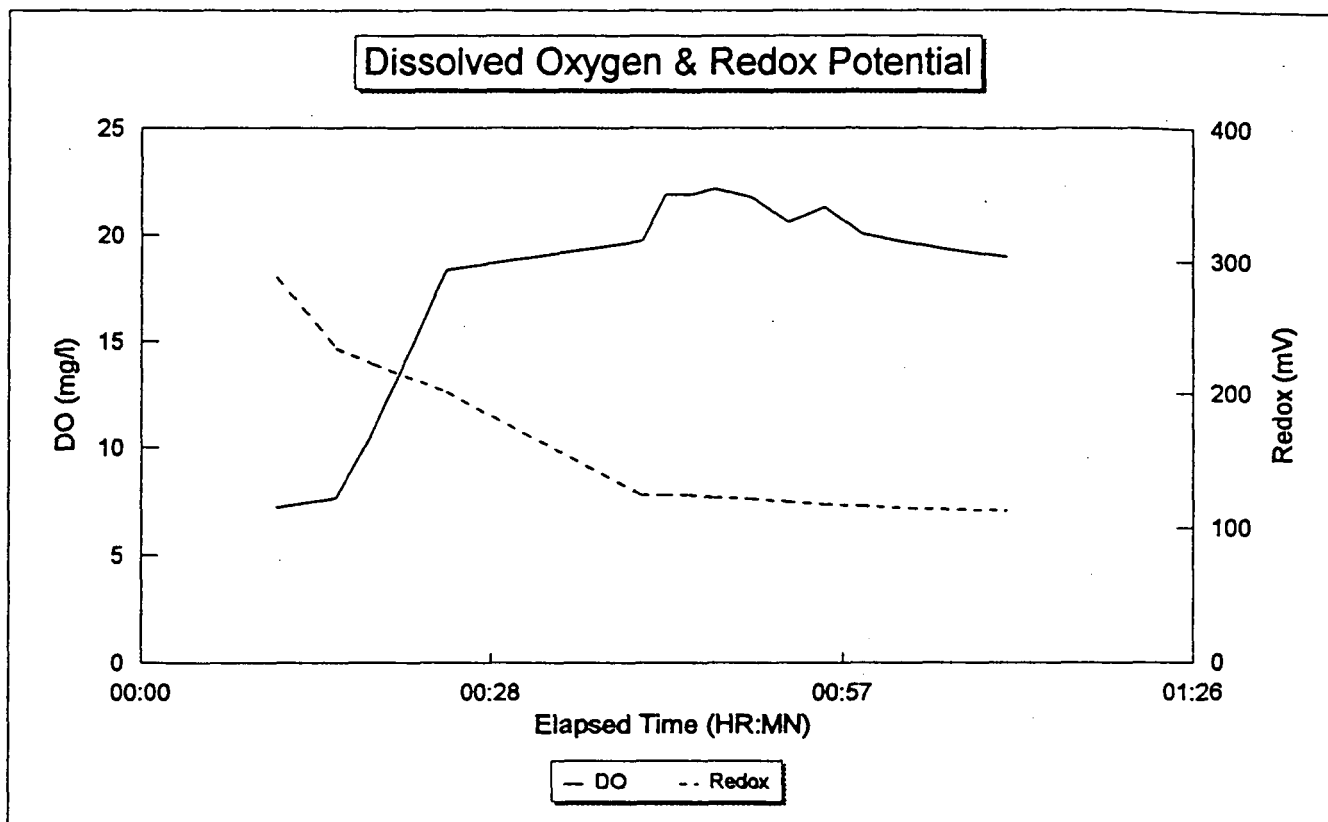
Field Parameter Data - Well 20591- Test D
Pump: QED Well Wizard - Instrumentation: QED Purge-Saver



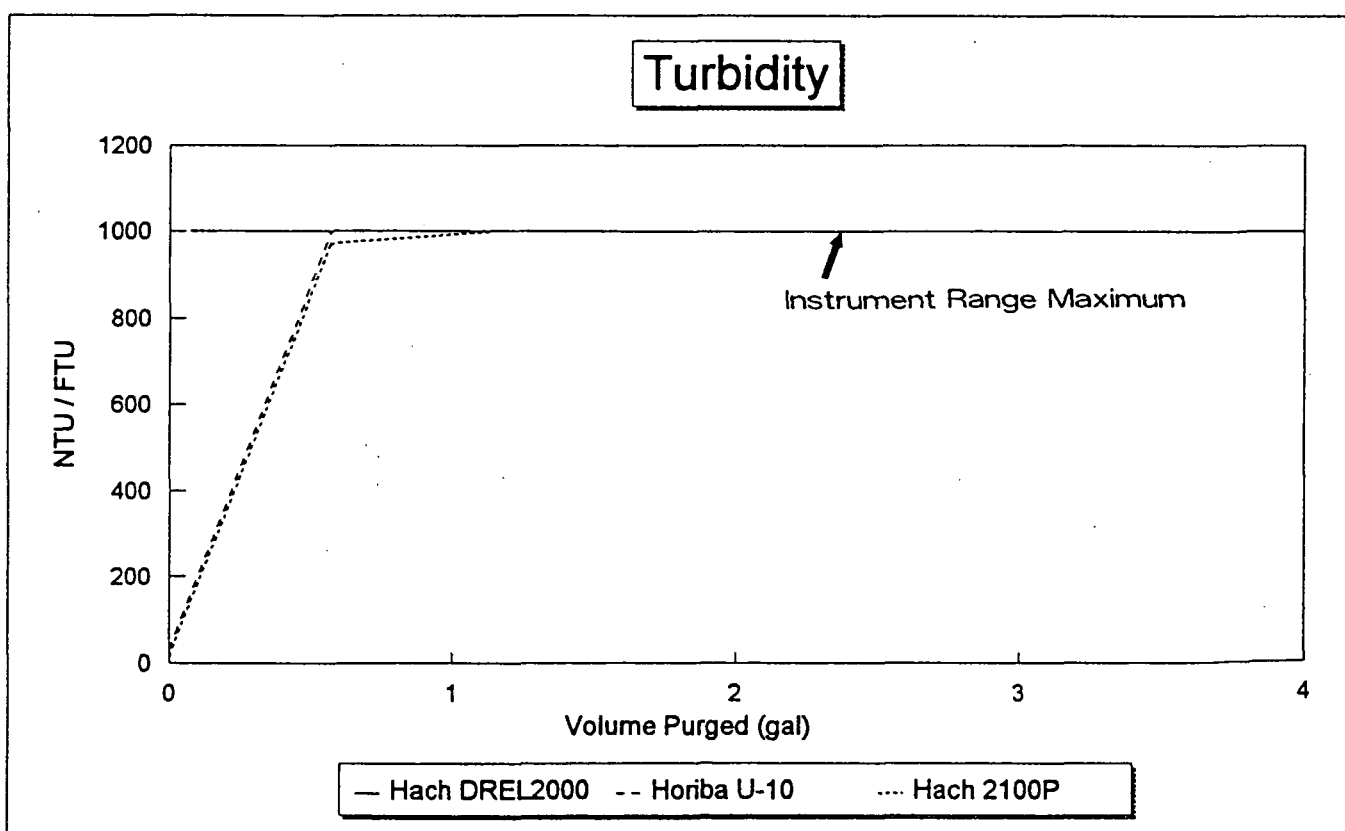
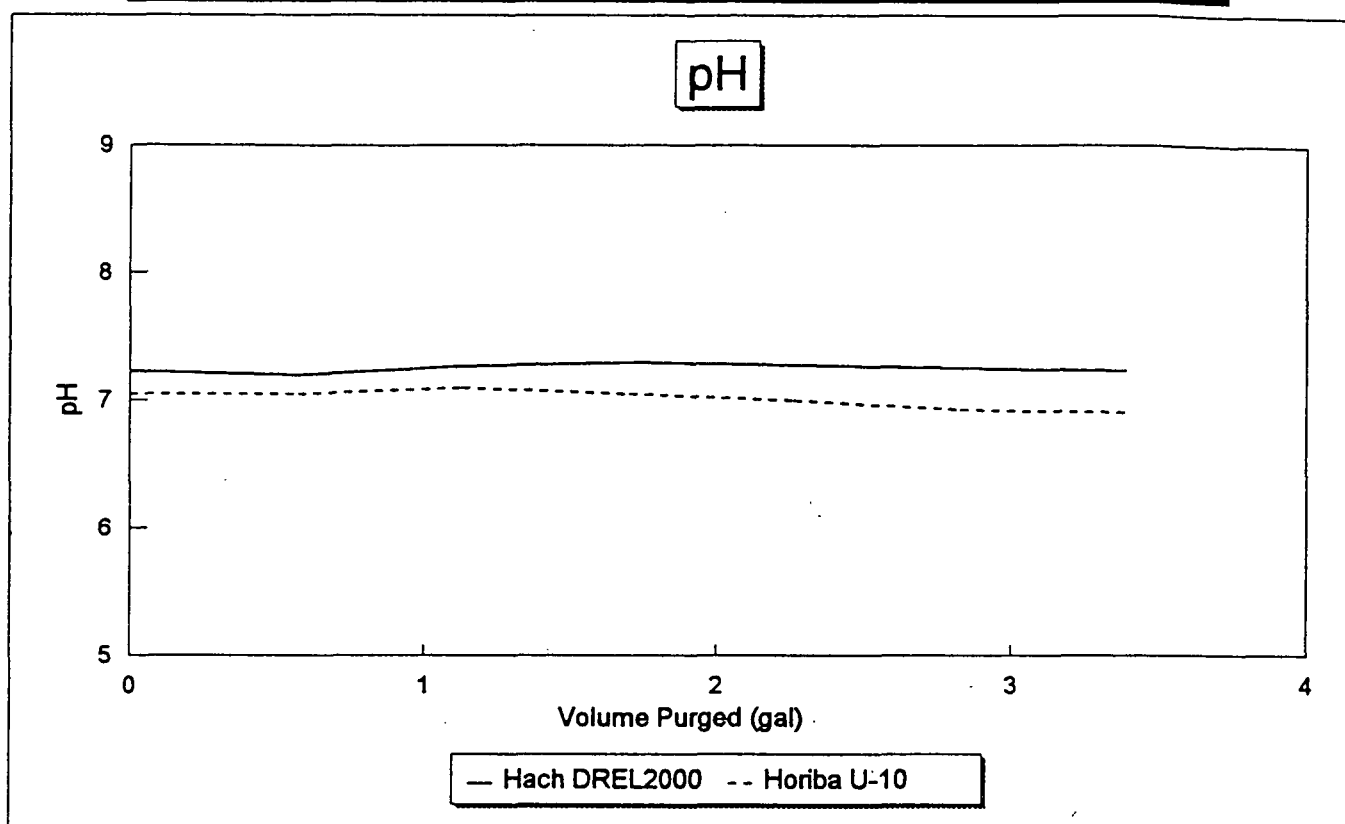
Field Parameter Data - Well 20591 - Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver



Field Parameter Data - Well 20591 - Test E
Pump: GeoGuard MasterFlo - Instrumentation: QED Purge-Saver

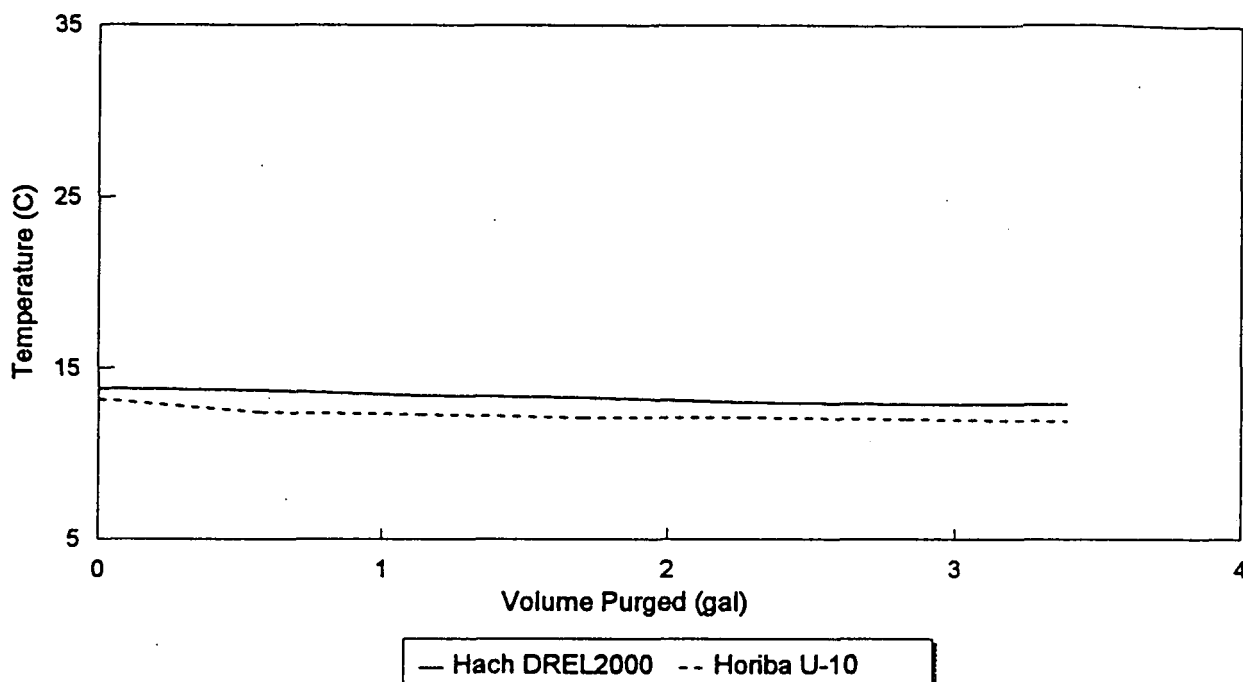


Field Parameter Data - Well 20591 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

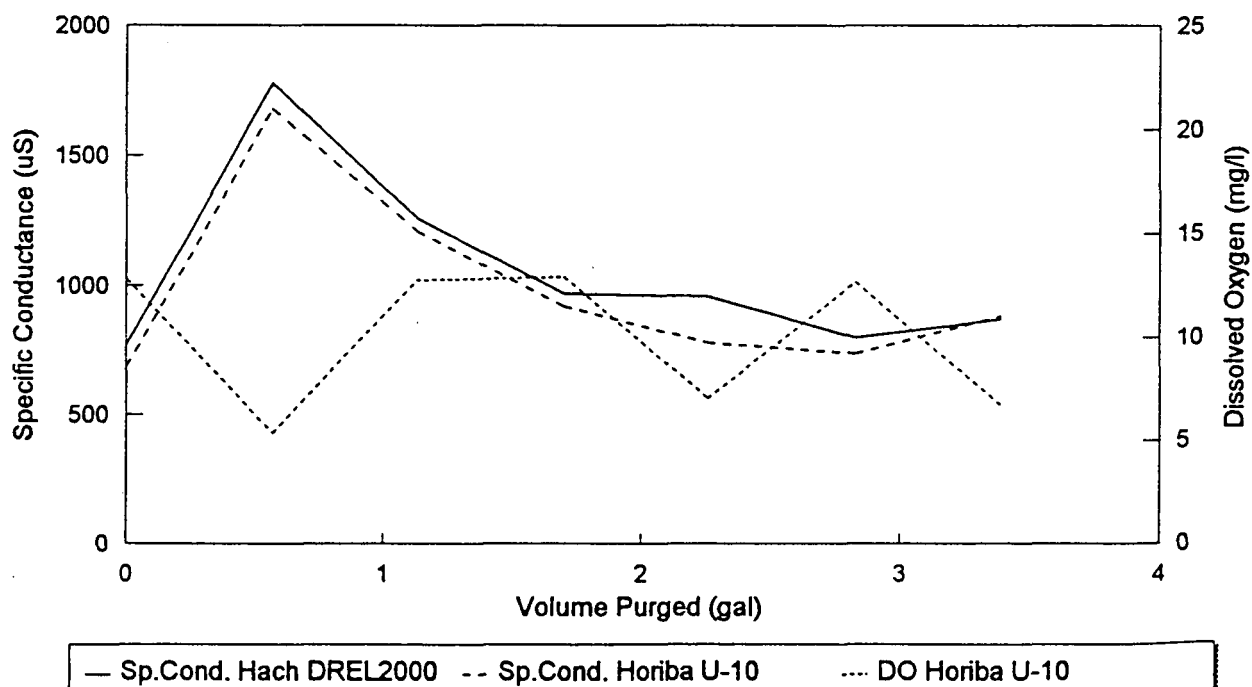


Field Parameter Data - Well 20591 - Test F
Pump: Bailer - Instrumentation: Hach DREL2000 / Horiba U-10

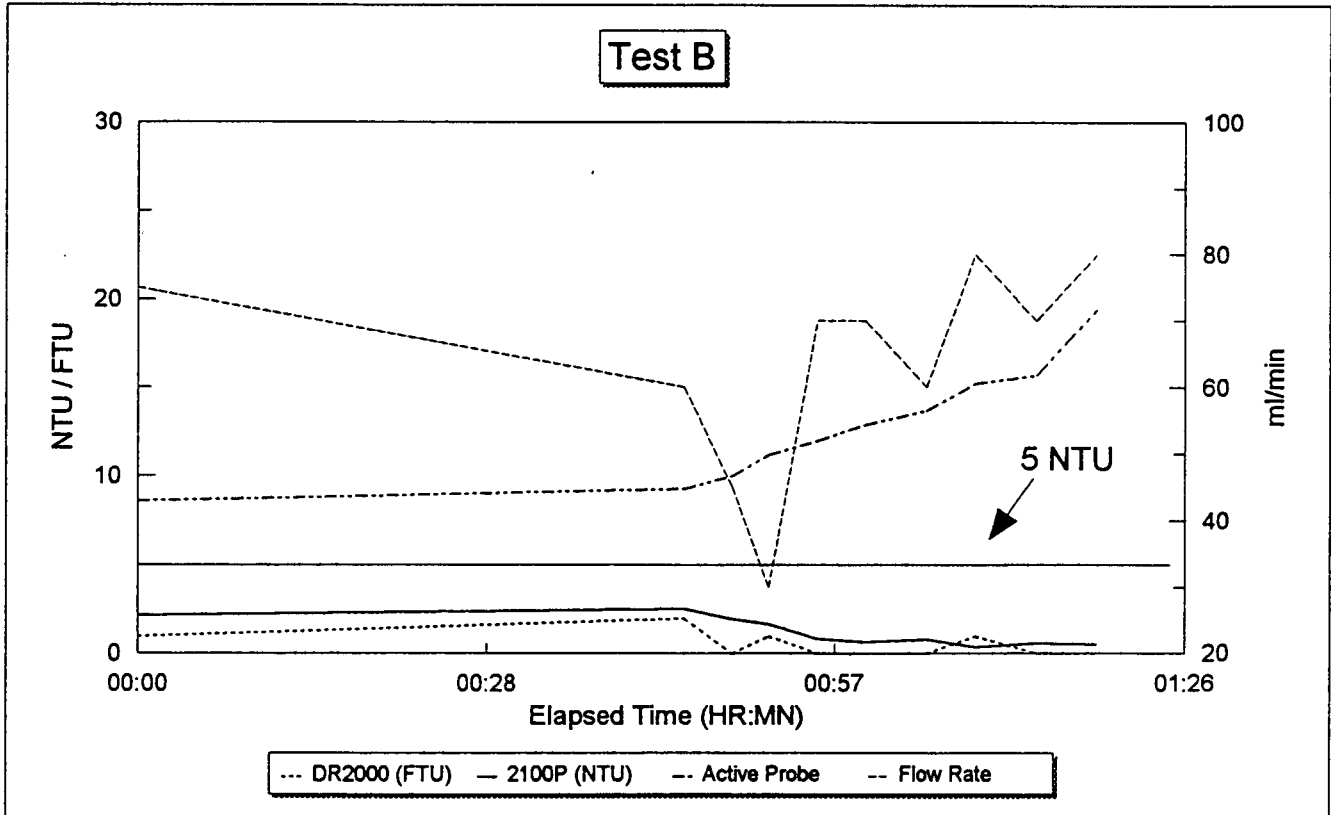
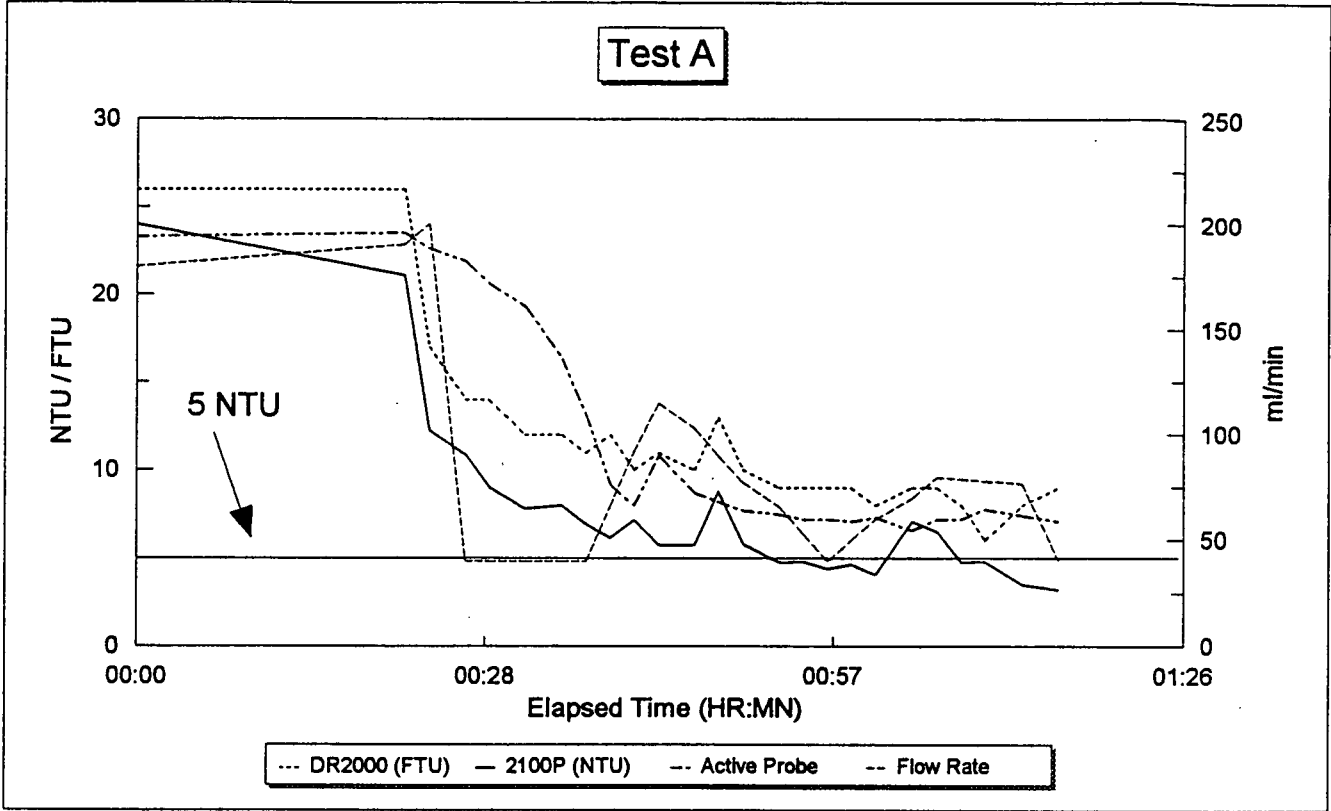
Temperature



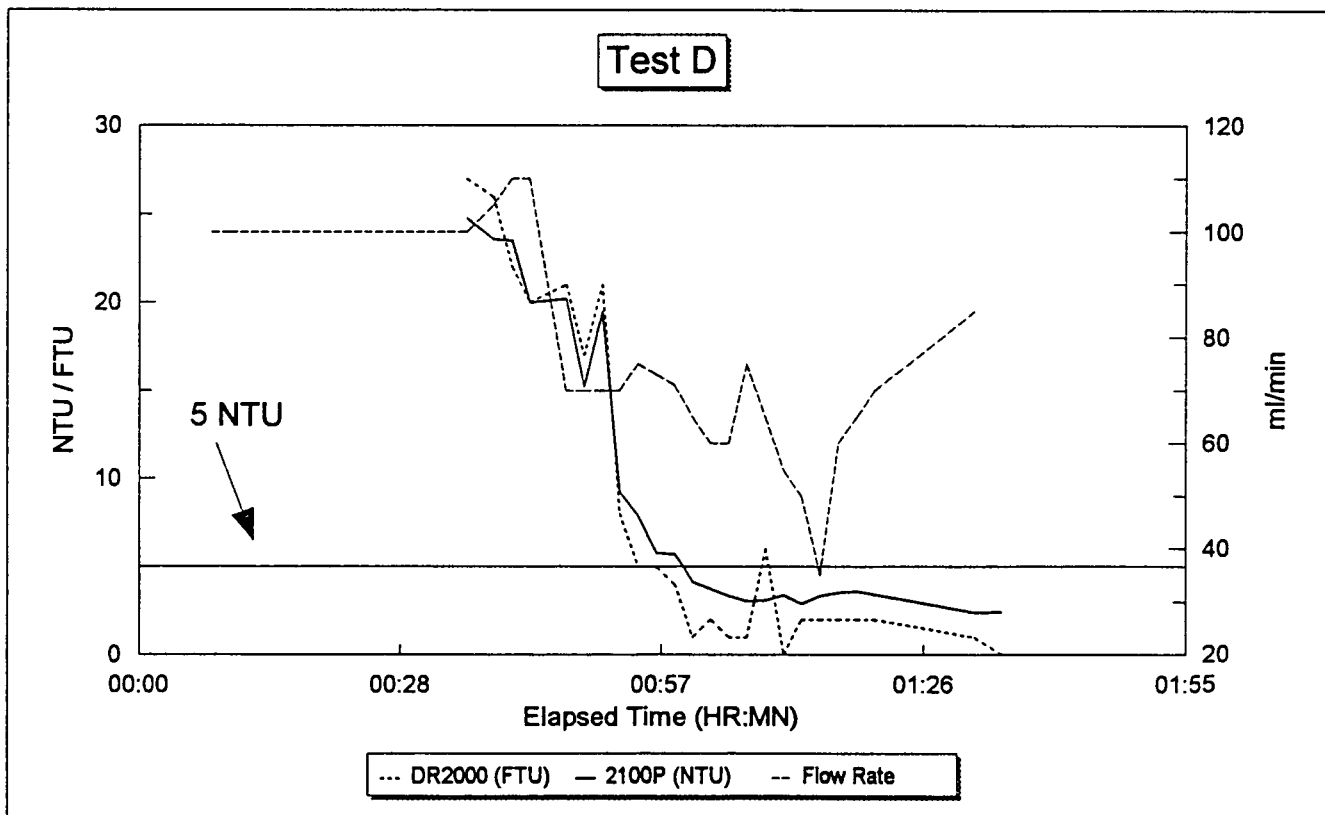
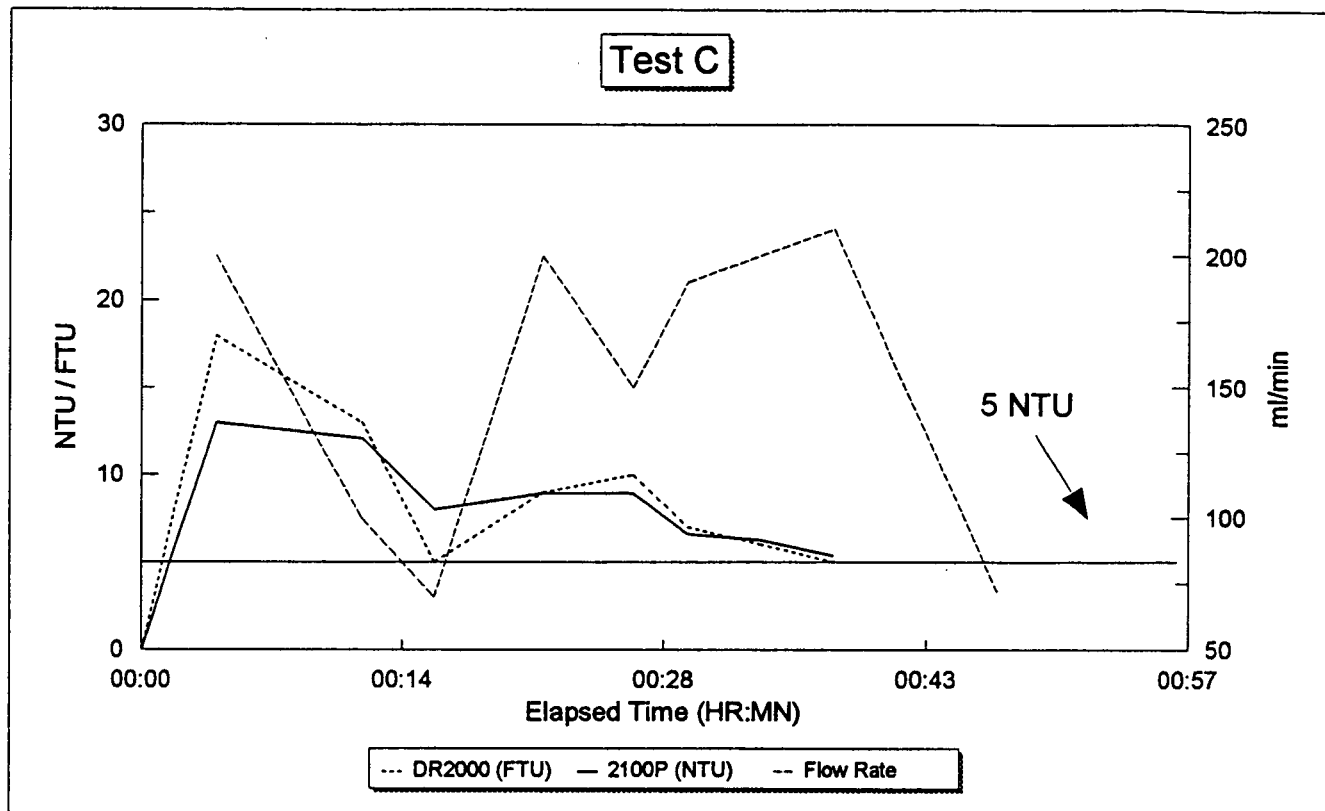
Specific Conductance & Dissolved Oxygen



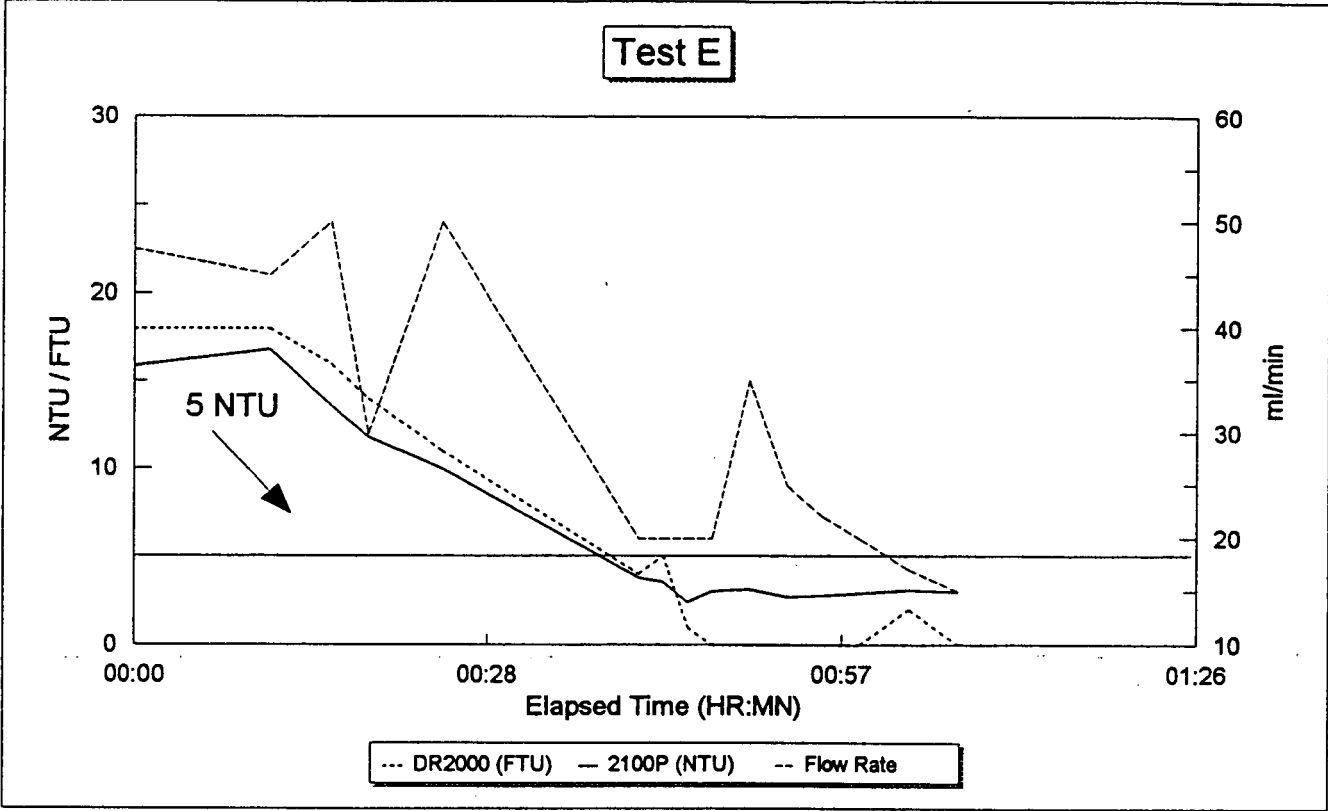
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Flow vs Turbidity - Well 20591



Flow vs Turbidity - Well 20591



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Metals

Radionuclides

VOCs

D-4.2 Constituents Exceeding Rocky Flats Groundwater Background

Metals

Radionuclides

VOCs

Analyte:		Aluminum				Antimony				Arsenic				Barium				Beryllium				Cadmium			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered		
Sample Type:		Pumped				Pumped				Pumped				Pumped				Pumped				Pumped			
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
1786	Accuwell	26.4	B	172	B	19.9	B	24.7	B	2	U	2	U	246		244		1	U	1	U	1	U	3	U
1786	Grundfos	12	U	30.7	B	13	U	13	U	2	U	2	U	175	B	241		1	U	1	U	1	U	3	U
1786	Marshalk	12.6	B	13	B	13	U	13	U	2	U	2	U	244		246		1	U	1	U	1	U	3	U
1786	Well Wizard	19.2	B	78.1	B	16.5	B	14.4	B	2	U	2	U	261		249		1	U	1	U	1	U	3	U
2587	Accuwell	12	U	14.6	B	13	U	13	U	2	U	2	U	138	B	139	B	1	U	1	U	1	U	3	U
2587	Geoguard	12	U	33	B	13	U	13	U	2	U	2	U	136	B	141	B	1	U	1	U	1	U	3	U
2587	Grundfos	20.6	B	28.2	B	15.3	B	23.5	B	2	U	2	U	147	B	145	B	1	U	1	U	1	U	3	U
2587	Marshalk	12	U	28.2	B	18	B	15.9	B	2	U	2	U	148	B	148	B	1	U	1	U	1	U	3	U
20591	Accuwell	18.8	B	15.4	B	13	U	15	B	2	U	2	U	145	B	134	B	1	U	1	U	1	U	3	U
20591	Geoguard	12	U	12	U	13.3	B	13	U	2	U	2	U	150	B	152	B	1	U	1	U	1	U	3	U
20591	Marshalk	12	U	12	U	16.2	B	13	U	2	U	2	U	144	B	142	B	1	U	1	U	1	U	3	U
41691	Accuwell	15	B	12	U	13	U	13	U	2	U	2	U	138	B	136	B	1	U	1	U	1	U	3	U
41691	Geoguard	12	U	16.5	B	13	U	13	U	2	U	2	U	128	B	130	B	1	U	1	U	1	U	3	U
41691	Grundfos	21.8	B	13.9	B	13	U	13.7	B	2	U	2	U	139	B	133	B	1	U	1	U	1	U	3	U
41691	Marshalk	15	B	19.2	B	13.7	B	13	U	2	U	2	U	140	B	133	B	1	U	1	U	1	U	3	U

D 0001

Analyte:		Calcium				Chromium				Cobalt				Copper				Iron			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered		Unfiltered		Filtered		Unfiltered		Filtered		Unfiltered		Filtered		Unfiltered		Filtered		Unfiltered	
Sample Type:		Pumped				Pumped				Pumped				Pumped				Pumped			
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	558000		562000		2 U		2 U		4.1 B		4.8 B		4.2 B		2 U		13.8 B		146	
1786	Grundfos	414000		555000		2 U		2 U		3 U		3.7 B		2 U		2 U		7.9 B		27.2 B	
1786	Marshalk	565000		564000		2 U		2 U		3.4 B		3 U		2 U		2 U		7.2 B		13.2 B	
1786	Well Wizard	590000		569000		2 U		2 U		4 B		4 B		2 U		2 U		9.4 B		75 B	
2587	Accuwell	139000		139000		2 U		2 U		3 U		3 U		2 U		2 U		5.5 B		22.2 B	
2587	Geoguard	138000		140000		2 U		2 U		3 U		3 U		2 U		2 U		10.6 B		68.5 B	
2587	Grundfos	144000		143000		2 U		2 U		3 U		3 U		2 U		2 U		7 B		37 B	
2587	Marshalk	146000		144000		2 U		2 U		3 U		3 U		4.2 B		2 U		5.5 B		21.3 B	
20591	Accuwell	116000		110000		2 U		2 U		3 U		3 U		2 U		2 U		9.9 B		42.5 B	
20591	Geoguard	112000		113000		2 U		2 U		3 U		3 U		2 U		2 U		48.4 B		64.1 B	
20591	Marshalk	109000		105000		2 U		2 U		3 U		3 U		3.2 B		2 U		5.8 B		26.8 B	
41691	Accuwell	73800		72000		2 U		2 U		3 U		3 U		2 U		2 U		81.6 B		81.8 B	
41691	Geoguard	70900		70700		2 U		2 U		3 U		3 U		2 U		2 U		83.7 B		88 B	
41691	Grundfos	73300		71300		2 U		2.7 B		3 U		3.2 B		2.7 B		2 U		100 B		117	
41691	Marshalk	74600		71900		2 U		2 U		3 U		3 U		2 U		2 U		101		108	

D.0002

Analyte:	Lead	Magnesium	Manganese	Mercury	Nickel
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
Field Prep.:	Filtered	Unfiltered	Filtered	Unfiltered	Filtered
Sample Type:	Pumped	Pumped	Pumped	Pumped	Pumped
Well	Result	Result	Result	Result	Result
1786	1U	190000	1U	1.68	0.2U
1786	1U	138000	1.38	1.8	0.2U
1786	1U	191000	1U	1U	0.2U
1786	1U	192000	1U	1.78	0.2U
1786	1U	193000	1.18	1U	0.2U
2587	1U	9860	1U	1U	0.2U
2587	1U	9880	1U	1U	0.2U
2587	1U	9950	1U	1.8	0.2U
2587	1U	10100	2.28	2.88	0.2U
2587	1.18	10300	1U	1.8	0.2U
20591	1U	10200	83.6	67.9	0.2U
20591	1U	9710	103	94.3	0.2U
20591	1U	9950	29.4	27.1	0.2U
20591	1U	9490	638	621	0.2U
41691	1U	17100	623	631	0.2U
41691	1U	16800	643	615	0.2U
41691	1U	16400	623	631	0.2U
41691	1U	17200	643	615	0.2U
41691	1U	17500	634	615	0.2U

D 0003

Analyte:		Potassium				Selenium				Silver				Sodium				Thallium			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered		Unfiltered		Filtered		Unfiltered		Filtered		Unfiltered		Filtered		Unfiltered		Filtered		Unfiltered	
Sample Type:		Pumped				Pumped				Pumped				Pumped				Pumped			
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	5410		5620		200		196		2	U	2	U	296000		294000		2	U	2	U
1786	Grundfos	3510	B	5360		202		182		2	U	2	U	202000		281000		1	U	1	U
1786	Marshalk	5860		5300		207		188		2	U	2	U	284000		285000		1	U	1	U
1786	Well Wizard	5640		5600		202		225		2	U	2	U	311000		294000		2	U	2	U
2587	Accuwell	1370	B	424	B	2	U	2	U	2	U	2	U	12500		12500		1	U	1	U
2587	Geoguard	1200	B	514	B	2	U	2	U	2	U	2	U	12200		12500		1	U	1	U
2587	Grundfos	593	B	1080	B	2.5	B	2	U	2	U	2	U	13400		13100		2	U	2	U
2587	Marshalk	812	B	1180	B	2	U	2	U	2	U	2	U	13600		13400		2	U	2	U
20591	Accuwell	17900		15500		2	U	2	U	2	U	2	U	21200		20000		2	U	2	U
20591	Geoguard	16500		20200		2	U	2	U	2	U	2	U	19100		19700		1	U	1	U
20591	Marshalk	20300		16200		2	U	2	U	2	U	2	U	18400		18200		1	U	1	U
41691	Accuwell	4980	B	5450		2	U	2	U	2	U	2	U	52300		51300		2	U	2	U
41691	Geoguard	6100		5250		2	U	2	U	2	U	2	U	47900		48600		1	U	1	U
41691	Grundfos	5930		5700		2	U	2	U	2	U	2	U	53000		50100		2	U	2	U
41691	Marshalk	5760		5390		2	U	2	U	2	U	2	U	53600		50300		2	U	2	U

[illegible]

0005

Analyte:		Lithium				Silicon			
Units:		µg/L				µg/L			
Field Prep.:		Filtered		Unfiltered		Filtered		Unfiltered	
Sample Type:		Pumped				Pumped			
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	352		355		6450		6840	
1786	Grundfos	244		346		4680		6530	
1786	Marshalk	347		351		6600		6630	
1786	Well Wizard	370		358		6730		6680	
2587	Accuwell	4.3	B	4.4	B	6140		6200	
2587	Geoguard	5.1	B	3.8	B	6070		6280	
2587	Grundfos	5.3	B	4.3	B	6380		6450	
2587	Marshalk	3.3	B	4.9	B	6460		6450	
20591	Accuwell	4.9	B	5.7	B	7390		6430	
20591	Geoguard	5.1	B	5.3	B	6270		6330	
20591	Marshalk	5.4	B	5.2	B	6160		5590	
41691	Accuwell	24.5	B	23.4	B	6750		6670	
41691	Geoguard	22.6	B	23.3	B	6590		6620	
41691	Grundfos	24.2	B	23.6	B	6730		6550	
41691	Marshalk	24.1	B	22.8	B	6780		6560	

D 0006

Analyte:		Aluminum				Antimony				Arsenic				Barium				Beryllium				Cadmium			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered				Filtered				Filtered				Filtered				Filtered				Filtered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	26.4 B		12 U		19.9 B		13 U		2 U		2 U		246		237		1 U		1 U		3 U		3 U	
1786	Grundfos	12 U				13 U				2 U				175 B				1 U				3 U			
1786	Marshalk	12.6 B				13 U				2 U				244				1 U				3 U			
1786	Well Wizard	19.2 B				16.5 B				2 U				261				1 U				3 U			
2587	Accuwell	12 U		12 U		13 U		13 U		2 U		2 U		138 B		137 B		1 U		1 U		3 U		3 U	
2587	Geoguard	12 U				13 U				2 U				136 B				1 U				3 U			
2587	Grundfos	20.6 B				15.3 B				2 U				147 B				1 U				3 U			
2587	Marshalk	12 U				18 B				2 U				148 B				1 U				3 U			
20591	Accuwell	18.8 B		12 U		13 U		13 U		2 U		2 U		145 B		507		1 U		1 U		3 U		3 U	
20591	Geoguard	12 U				13.3 B				2 U				150 B				1 U				3 U			
20591	Marshalk	12 U				16.2 B				2 U				144 B				1 U				3 U			
41691	Accuwell	15 B		12 U		13 U		13 U		2 U		2 U		138 B		128 B		1 U		1 U		3 U		3 U	
41691	Geoguard	12 U				13 U				2 U				128 B				1 U				3 U			
41691	Grundfos	21.8 B				13 U				2 U				139 B				1 U				3 U			
41691	Marshalk	15 B				13.7 B				2 U				140 B				1 U				3 U			
Analyte:		Aluminum				Antimony				Arsenic				Barium				Beryllium				Cadmium			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Unfiltered				Unfiltered				Unfiltered				Unfiltered				Unfiltered				Unfiltered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	172 B		83300		24.7 B		25.4 B		2 U		10.5		244		908		1 U		5.1		3 U		3 U	
1786	Grundfos	30.7 B				13 U				2 U				241				1 U				3 U			
1786	Marshalk	13 B				13 U				2 U				246				1 U				3 U			
1786	Well Wizard	78.1 B				14.4 B				2 U				249				1 U				3 U			
2587	Accuwell	14.6 B		15600		13 U		13 U		2 U		5.4 B		139 B		309		1 U		1.4 B		3 U		3 U	
2587	Geoguard	33 B				13 U				2 U				141 B				1 U				3 U			
2587	Grundfos	28.2 B				23.5 B				2 U				145 B				1 U				3 U			
2587	Marshalk	28.2 B				15.9 B				2 U				148 B				1 U				3 U			
20591	Accuwell	15.4 B		43600		15 B		22.7 B		2 U		3.3 B		134 B		693		1 U		6.3		3 U		3 U	
20591	Geoguard	12 U				13 U				2 U				152 B				1 U				3 U			
20591	Marshalk	12 U				13 U				2 U				142 B				1 U				3 U			
41691	Accuwell	12 U		11500		13 U		13 U		2 U		3.5 B		136 B		229		1 U		1 U		3 U		3 U	
41691	Geoguard	16.5 B				13 U				2 U				130 B				1 U				3 U			
41691	Grundfos	13.9 B				13.7 B				2 U				133 B				1 U				3 U			
41691	Marshalk	19.2 B				13 U				2 U				133 B				1 U				3 U			

Analyte:		Calcium				Chromium				Cobalt				Copper				Iron			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered				Filtered				Filtered				Filtered				Filtered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	558000		555000		2 U		2 U		4.1 B		3 U		4.2 B		2.4 B		13.8 B		4.4 B	
1786	Grundfos	414000				2 U				3 U				2 U				7.9 B			
1786	Marshalk	565000				2 U				3.4 B				2 U				7.2 B			
1786	Well Wizard	590000				2 U				4 B				2 U				9.4 B			
2587	Accuwell	139000		139000		2 U		2 U		3 U		3 U		2 U		2.6 B		5.5 B		16.4 B	
2587	Geoguard	138000				2 U				3 U				2 U				10.6 B			
2587	Grundfos	144000				2 U				3 U				2 U				7 B			
2587	Marshalk	146000				2 U				3 U				4.2 B				5.5 B			
20591	Accuwell	116000		174000		2 U		2 U		3 U		8 B		2 U		2 U		9.9 B		1290	
20591	Geoguard	112000				2 U				3 U				2 U				48.4 B			
20591	Marshalk	109000				2 U				3 U				3.2 B				5.8 B			
41691	Accuwell	73800		70100		2 U		2 U		3 U		3 U		2 U		2.2 B		81.6 B		76 B	
41691	Geoguard	70900				2 U				3 U				2 U				83.7 B			
41691	Grundfos	73300				2 U				3 U				2.7 B				100 B			
41691	Marshalk	74600				2 U				3 U				2 U				101			
Analyte:		Calcium				Chromium				Cobalt				Copper				Iron			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Unfiltered				Unfiltered				Unfiltered				Unfiltered				Unfiltered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	562000		568000		2 U		87.1		4.8 B		35.4 B		2 U		101		146		84200	
1786	Grundfos	555000				2 U				3.7 B				2 U				27.2 B			
1786	Marshalk	564000				2 U				3 U				2 U				13.2 B			
1786	Well Wizard	569000				2 U				4 B				2 U				75 B			
2587	Accuwell	139000		142000		2 U		102		3 U		15.7 B		2 U		27.8		22.2 B		24900	
2587	Geoguard	140000				2 U				3 U				2 U				68.5 B			
2587	Grundfos	143000				2 U				3 U				2 U				37 B			
2587	Marshalk	14400				2 U				3 U				2 U				21.3 B			
20591	Accuwell	110000		154000		2 U		44.1		3 U		52.2		2 U		52.7		42.5 B		71500	
20591	Geoguard	113000				2 U				3 U				2 U				64.1 B			
20591	Marshalk	105000				2 U				3 U				2 U				26.8 B			
41691	Accuwell	72000		72700		2 U		15.3		3 U		8.6 B		2 U		16.5 B		81.8 B		16000	
41691	Geoguard	70700				2 U				3 U				2 U				88 B			
41691	Grundfos	71300				2.7 B				3.2 B				2 U				117			
41691	Marshalk	71900				2 U				3 U				2 U				108			

D 0008

Analyte:		Lead				Magnesium				Manganese				Mercury				Nickel			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered				Filtered				Filtered				Filtered				Filtered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	1 U		1 U		190000		187000		1 U		2.5 B		0.2 U		0.2 U		6.7 B		6 U	
1786	Grundfos	1 U				138000				1.3 B				0.2 U				6 U			
1786	Marshalk	1 U				191000				1 U				0.2 U				6 U			
1786	Well Wizard	1 U				201000				1.1 B				0.2 U				6 U			
2587	Accuwell	1 U		1 U		9860		9900		1 U		14.9 B		0.2 U		0.2 U		14.7 B		55.7	
2587	Geoguard	1 U				9690				1 U				0.2 U				12.5 B			
2587	Grundfos	1 U				10100				2.2 B				0.2 U				27.8 B			
2587	Marshalk	1.1 B				10300				1 U				0.2 U				21.3 B			
20591	Accuwell	1 U		1 U		10200		18200		83.6		1090		0.2 U		0.2 U		6 U		6 U	
20591	Geoguard	1 U				9950				103				0.2 U				6 U			
20591	Marshalk	1 U				9490				29.4				0.2 U				6 U			
41691	Accuwell	1 U		1 U		17100		16200		638		645		0.2 U		0.2 U		8 B		6 U	
41691	Geoguard	1 U				16400				623				0.2 U				6 U			
41691	Grundfos	1 U				17200				643				0.2 U				8.8 B			
41691	Marshalk	1 U				17500				634				0.2 U				8.3 B			
Analyte:		Lead				Magnesium				Manganese				Mercury				Nickel			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Unfiltered				Unfiltered				Unfiltered				Unfiltered				Unfiltered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped			
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	1 U		65.2		190000		202000		1.6 B		672		0.2 U		0.2 U		8.3 B		81	
1786	Grundfos	1 U				189000				1 B				0.2 U				6 U			
1786	Marshalk	1 U				192000				1 U				0.2 U				6.4 B			
1786	Well Wizard	1 U				193000				1.7 B				0.2 U				6 U			
2587	Accuwell	1 U		19.6		9880		12200		1 U		345		0.2 U		0.2 U		15.8 B		96.4	
2587	Geoguard	1 U				9950				1 B				0.2 U				14.5 B			
2587	Grundfos	1 U				10100				2.8 B				0.2 U				34.6 B			
2587	Marshalk	1 U				10200				1 B				0.2 U				20.1 B			
20591	Accuwell	1 U		65.2		9710		21400		67.9		1530		0.2 U		0.23		6 U		60.5	
20591	Geoguard	1 U				10100				94.3				0.2 U				6 U			
20591	Marshalk	1 U				9290				27.1				0.2 U				6 U			
41691	Accuwell	1 U		11.7		16800		18500		621		762		0.2 U		0.2 U		8.6 B		23.7 B	
41691	Geoguard	1 U				16400				631				0.2 U				7.2 B			
41691	Grundfos	1 U				16600				615				0.2 U				13.9 B			
41691	Marshalk	1 U				16800				615				0.2 U				7.9 B			

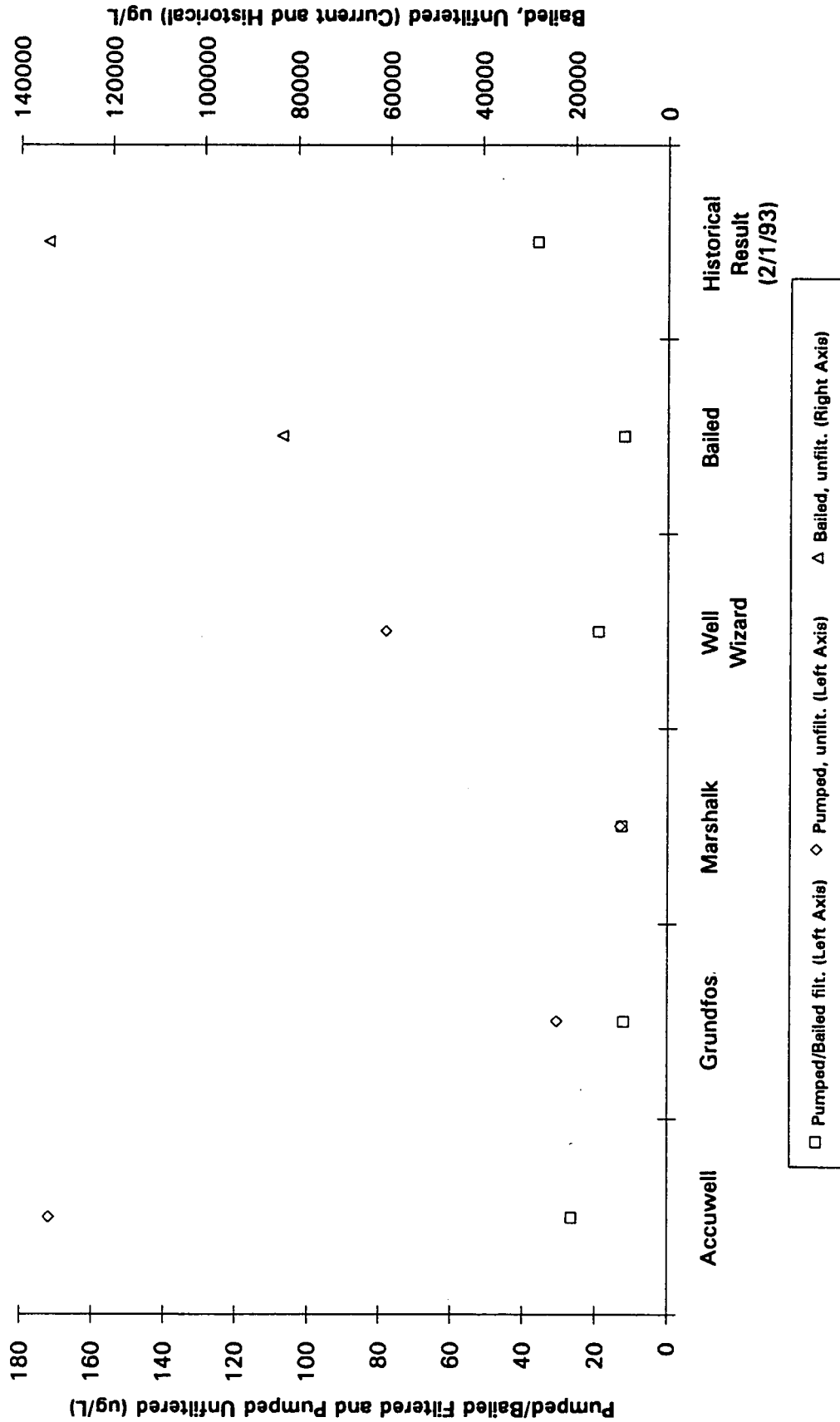
Analyte:		Potassium				Selenium				Silver				Sodium				Thallium			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Filtered				Filtered				Filtered				Filtered				Filtered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	5410		4880	B	200		220		2	U	2	U	296000		281000		2	U	1	U
1786	Grundfos	3510	B			202				2	U			202000				1	U		
1786	Marshalk	5860				207				2	U			284000				1	U		
1786	Well Wizard	5640				202				2	U			311000				2	U		
2587	Accuwell	1370	B	680	B	2	U	2	U	2	U	2	U	12500		12600		1	U	1	U
2587	Geoguard	1200	B			2	U			2	U			12200				1	U		
2587	Grundfos	593	B			2.5	B			2	U			13400				2	U		
2587	Marshalk	812	B			2	U			2	U			13600				2	U		
20591	Accuwell	17900		141000		2	U	2	U	2	U	2	U	21200		19800		2	U	1	U
20591	Geoguard	16500				2	U			2	U			19100				1	U		
20591	Marshalk	20300				2	U			2	U			18400				1	U		
41691	Accuwell	4980	B	5130		2	U	2	U	2	U	2	U	52300		48100		2	U	1	U
41691	Geoguard	6100				2	U			2	U			47900				1	U		
41691	Grundfos	5930				2	U			2	U			53000				2	U		
41691	Marshalk	5760				2	U			2	U			53600				2	U		
Analyte:		Potassium				Selenium				Silver				Sodium				Thallium			
Units:		µg/L				µg/L				µg/L				µg/L				µg/L			
Field Prep.:		Unfiltered				Unfiltered				Unfiltered				Unfiltered				Unfiltered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	5620		16100		196		188		2	U	2	U	294000		274000		2	U	1	U
1786	Grundfos	5360				182				2	U			281000				1	U		
1786	Marshalk	5300				188				2	U			285000				1	U		
1786	Well Wizard	5600				225				2	U			294000				2	U		
2587	Accuwell	424	B	3440	B	2	U	2	U	2	U	2	U	12500		12300		1	U	1	U
2587	Geoguard	514	B			2	U			2	U			12500				1	U		
2587	Grundfos	1080	B			2	U			2	U			13100				2	U		
2587	Marshalk	1180	B			2	U			2	U			13400				2	U		
20591	Accuwell	15500		93300		2	U	2	B	2	U	2	U	20000		19300		2	U	1	B
20591	Geoguard	20200				2	U			2	U			19700				1	U		
20591	Marshalk	16200				2	U			2	U			18200				1	U		
41691	Accuwell	5450		7160		2	U	2	U	2	U	2	U	51300		47700		2	U	1	U
41691	Geoguard	5250				2	U			2	U			48600				1	U		
41691	Grundfos	5700				2	U			2	U			50100				2	U		
41691	Marshalk	5390				2	U			2	U			50300				2	U		

Analyte:	Vanadium	Zinc	Molybdenum	Tin	Strontium	Cesium				
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L				
Field Prep.:	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered				
Sample Type:	Pumped	Pumped	Pumped	Pumped	Pumped	Pumped				
Well	Result	Result	Result	Result	Result	Result				
1786	Accuwell	2 U	12.8 B	6.5 B	3 U	12 U	6090	5790	43 U	43 U
1786	Grundfos	2.9 B		4.1 B		3 U	12 U	4330		43 U
1786	Marshalk	2.9 B		13.7 B		3 U	12 U	5960		43 U
1786	Well Wizard	2 U		7.6 B		3 U	12 U	6480		43 U
2587	Accuwell	2 U	2.2 B	6.4 B	8.2 B	3 U	12 U	375	376	43 U
2587	Geoguard	2.6 B		8 B		3 U	12 U	369		43 U
2587	Grundfos	3.4 B		7.4 B		5.3 B	12 U	398		43 U
2587	Marshalk	3.4 B		8.6 B		3 U	12 U	406		43 U
20591	Accuwell	3 B	2.2 B	8.8 B	3.8 B	3.9 B	12 U	483	781	43 U
20591	Geoguard	2 U		4.7 B		3 U	12 U	448		43 U
20591	Marshalk	2 U		4.5 B		4.6 B	12 U	441		43 U
41691	Accuwell	2 U	2 U	6.7 B	9.8 B	3 U	12 U	482	445	43 U
41691	Geoguard	2 U		4.8 B		3 U	12 U	448		43 U
41691	Grundfos	2 U		10.9 B		3.6 B	12 U	487		43 U
41691	Marshalk	2 U		7.9 B		3 U	12 U	497		43 U
Analyte:	Vanadium	Zinc	Molybdenum	Tin	Strontium	Cesium				
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L				
Field Prep.:	Unfiltered	Unfiltered	Unfiltered	Unfiltered	Unfiltered	Unfiltered				
Sample Type:	Pumped	Pumped	Pumped	Pumped	Pumped	Pumped				
Well	Result	Result	Result	Result	Result	Result				
1786	Accuwell	2 U	9.2 B	7.4 B	12 U	6000	6100	43 U	43 U	
1786	Grundfos	4 B		6.7 B		3 U	12 U	5930		43 U
1786	Marshalk	2.9 B		10 B		4.6 B	12 U	6010		43 U
1786	Well Wizard	2 U		9.2 B		3 U	12 U	6120		43 U
2587	Accuwell	2 U	75.9	7.6 B	115	3 U	5.8 B	378	419	43 U
2587	Geoguard	2 U		7.5 B		3 U	12 U	379		43 U
2587	Grundfos	2.8 B		8.4 B		5 B	12 U	391		43 U
2587	Marshalk	4 B		6.9 B		3 U	12 U	401		43 U
20591	Accuwell	2 U	82	10.3 B	187	3.9 B	10.2 B	459	685	43 U
20591	Geoguard	2 U		10.7 B		3 U	12 U	457		43 U
20591	Marshalk	2 U		8 B		3 U	12 U	434		43 U
41691	Accuwell	2 U	32 B	7.2 B	64.3	3 U	12 U	472	483	43 U
41691	Geoguard	2 U		7.9 B		3 U	12 U	454		43 U
41691	Grundfos	2 U		10.4 B		4.5 B	12 U	464		43 U
41691	Marshalk	2 U		9.3 B		3 U	12 U	468		43 U

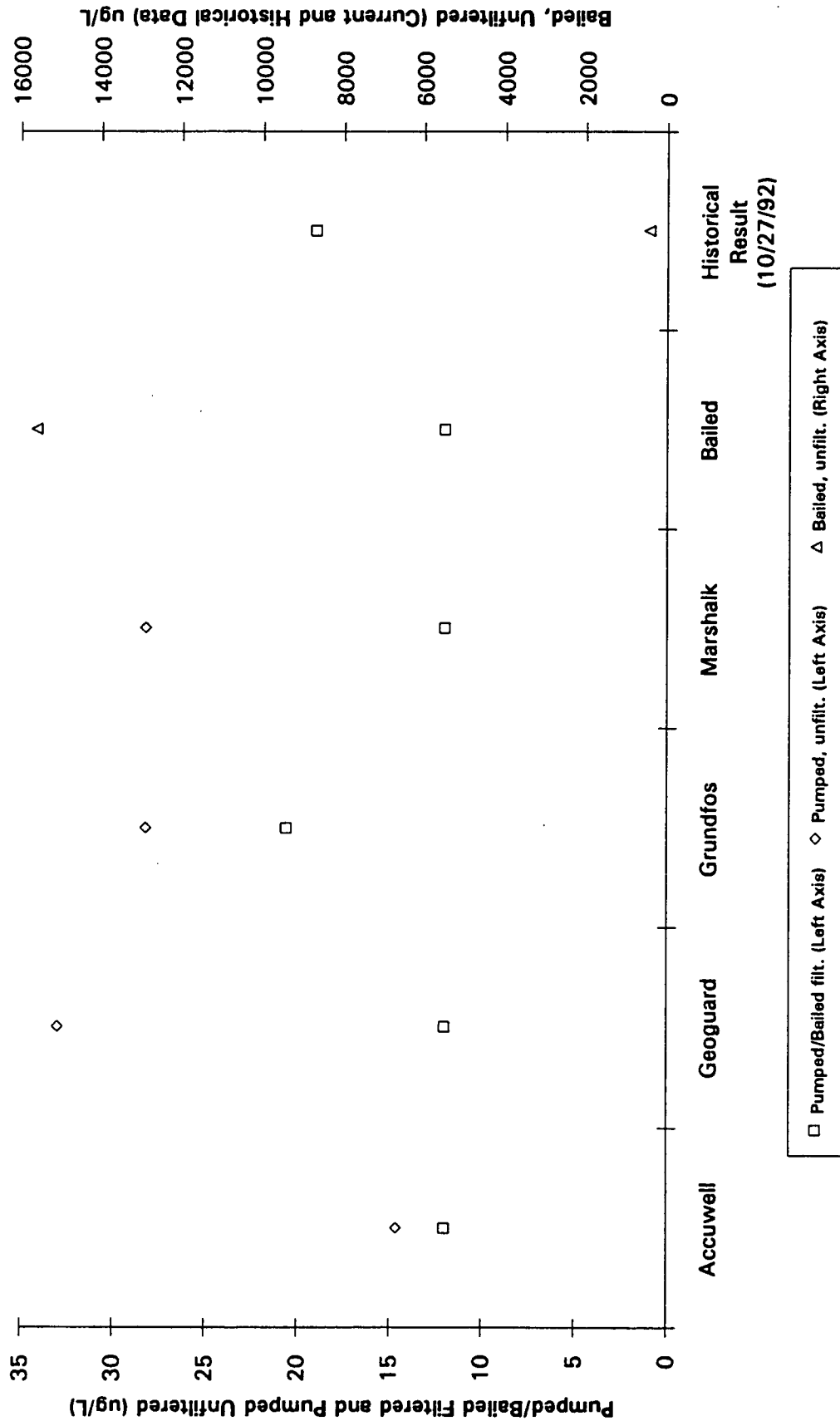
D 0011

Analyte:		Lithium				Silicon			
Units:		µg/L				µg/L			
Field Prep.:		Filtered				Filtered			
Sample Type:		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	352		342		6450		6480	
1786	Grundfos	244				4680			
1786	Marshalk	347				6600			
1786	Well Wizard	370				6730			
2587	Accuwell	4.3	B	3.9	B	6140		6220	
2587	Geoguard	5.1	B			6070			
2587	Grundfos	5.3	B			6380			
2587	Marshalk	3.3	B			6460			
20591	Accuwell	4.9	B	11.4	B	7390		5170	
20591	Geoguard	5.1	B			6270			
20591	Marshalk	5.4	B			6160			
41691	Accuwell	24.5	B	23	B	6750		6560	
41691	Geoguard	22.6	B			6590			
41691	Grundfos	24.2	B			6730			
41691	Marshalk	24.1	B			6780			
Analyte:		Lithium				Silicon			
Units:		µg/L				µg/L			
Field Prep.:		Unfiltered				Unfiltered			
Sample Type:		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	355		399		6840		131000	
1786	Grundfos	346				6530			
1786	Marshalk	351				6630			
1786	Well Wizard	358				6680			
2587	Accuwell	4.4	B	11.4	B	6200		36000	
2587	Geoguard	3.8	B			6280			
2587	Grundfos	4.3	B			6450			
2587	Marshalk	4.9	B			6450			
20591	Accuwell	5.7	B	37.9	B	6430		86200	
20591	Geoguard	5.3	B			6330			
20591	Marshalk	5.2	B			5590			
41691	Accuwell	23.4	B	30.7	B	6670		30800	
41691	Geoguard	23.3	B			6620			
41691	Grundfos	23.6	B			6550			
41691	Marshalk	22.8	B			6560			

Well 1786, Aluminum



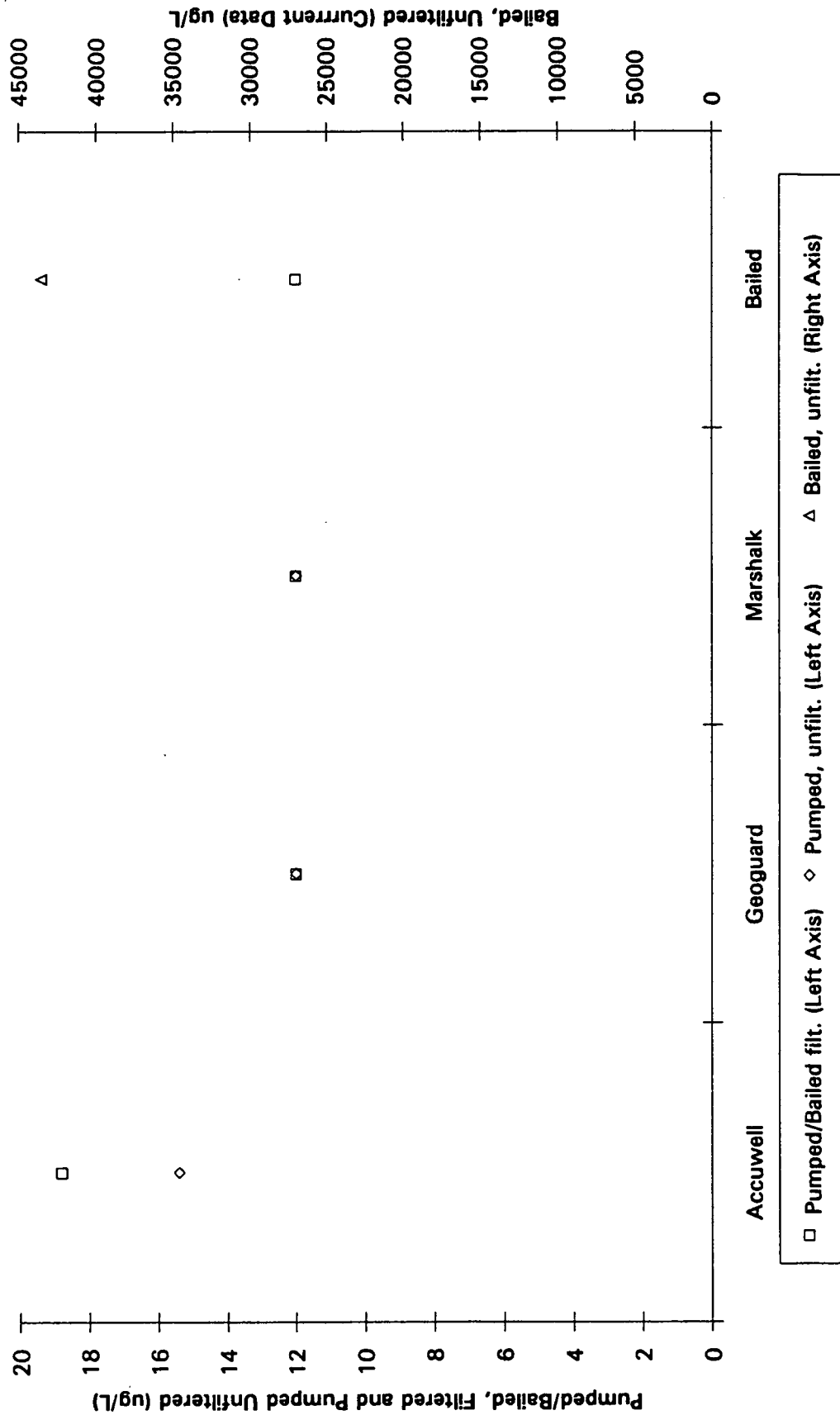
Well 2587, Aluminum



9/27/94

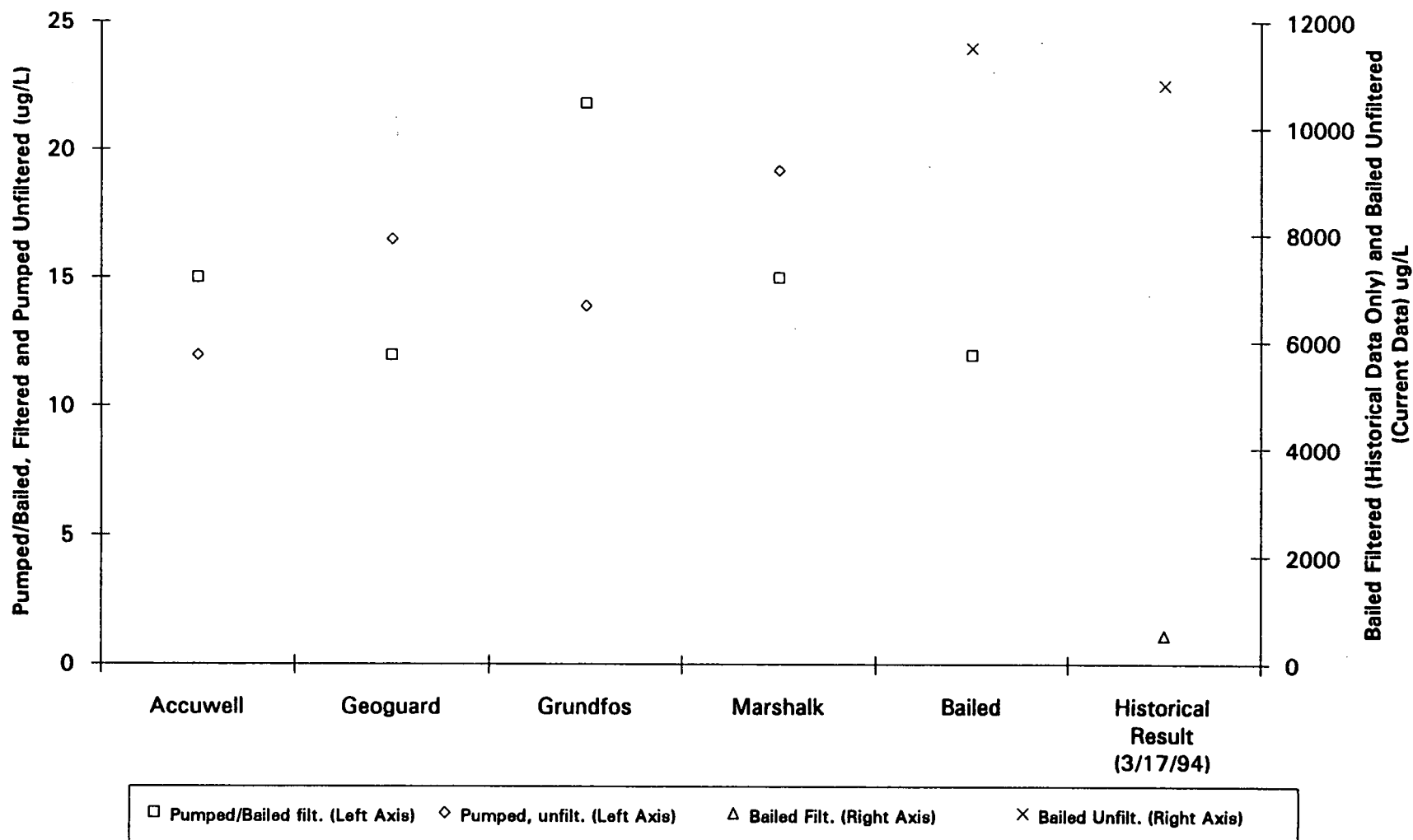
933-2715.7.710

Well 20591, Aluminum

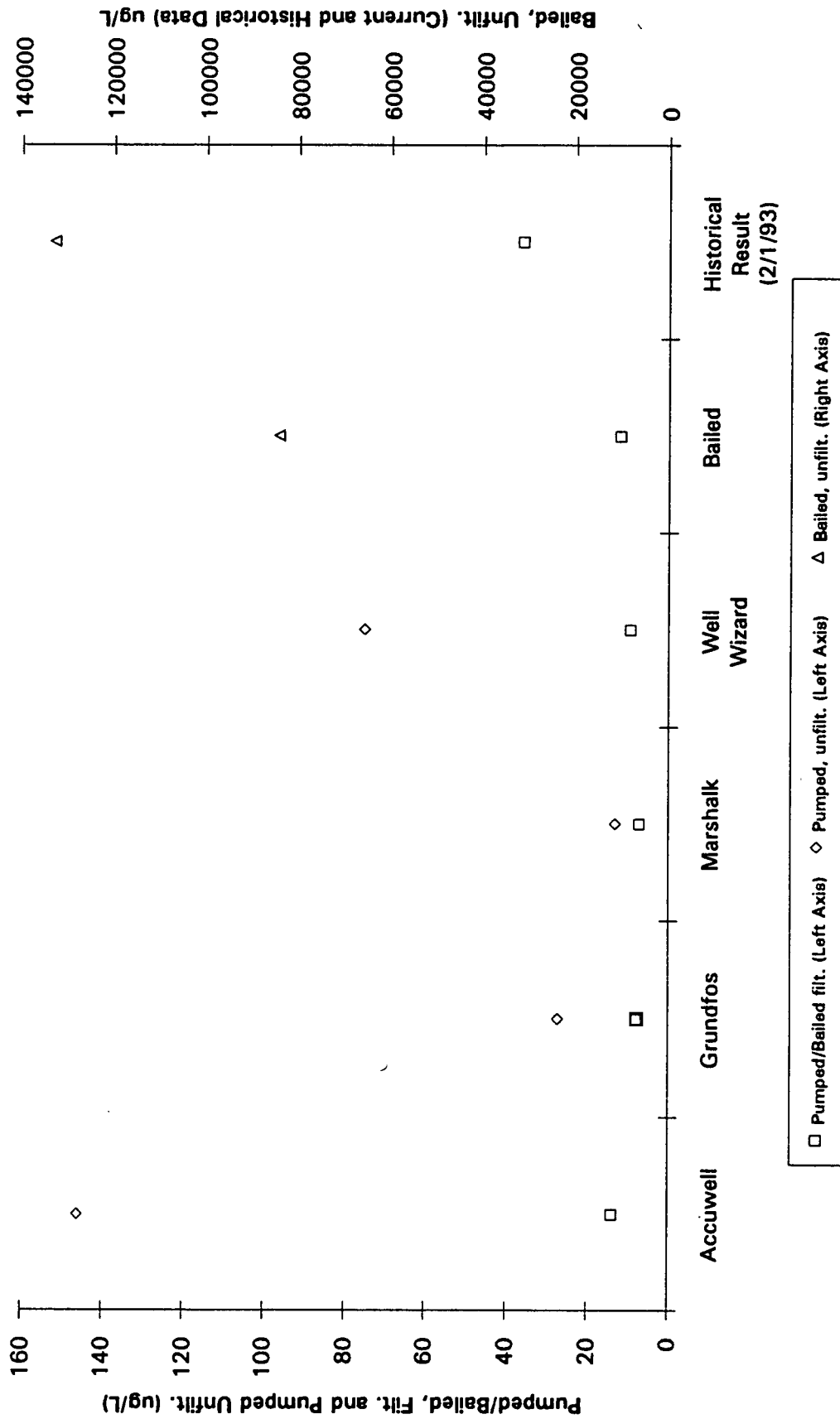


D 0015

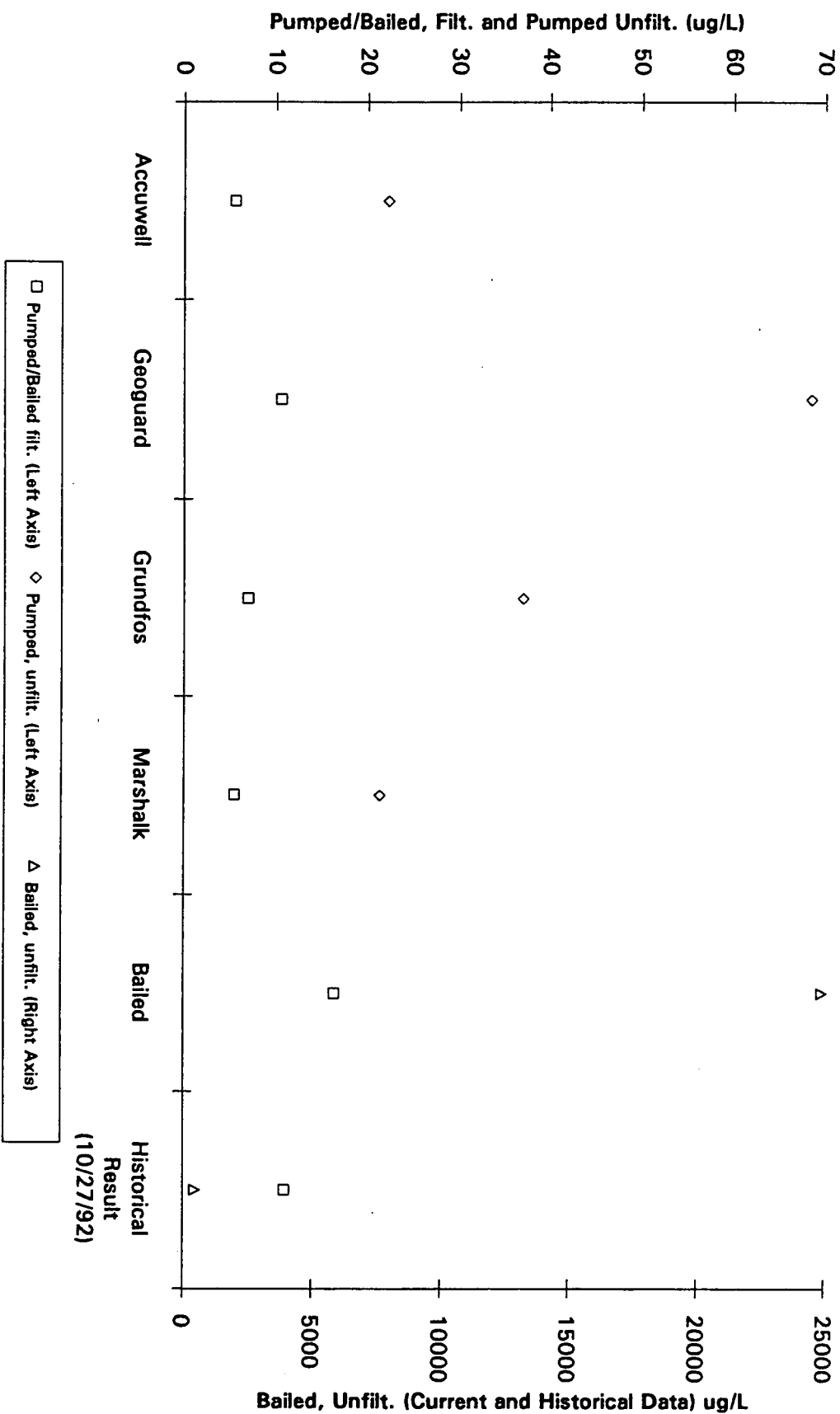
Well 41691, Aluminum



Well 1786, Iron



Well 2587, Iron

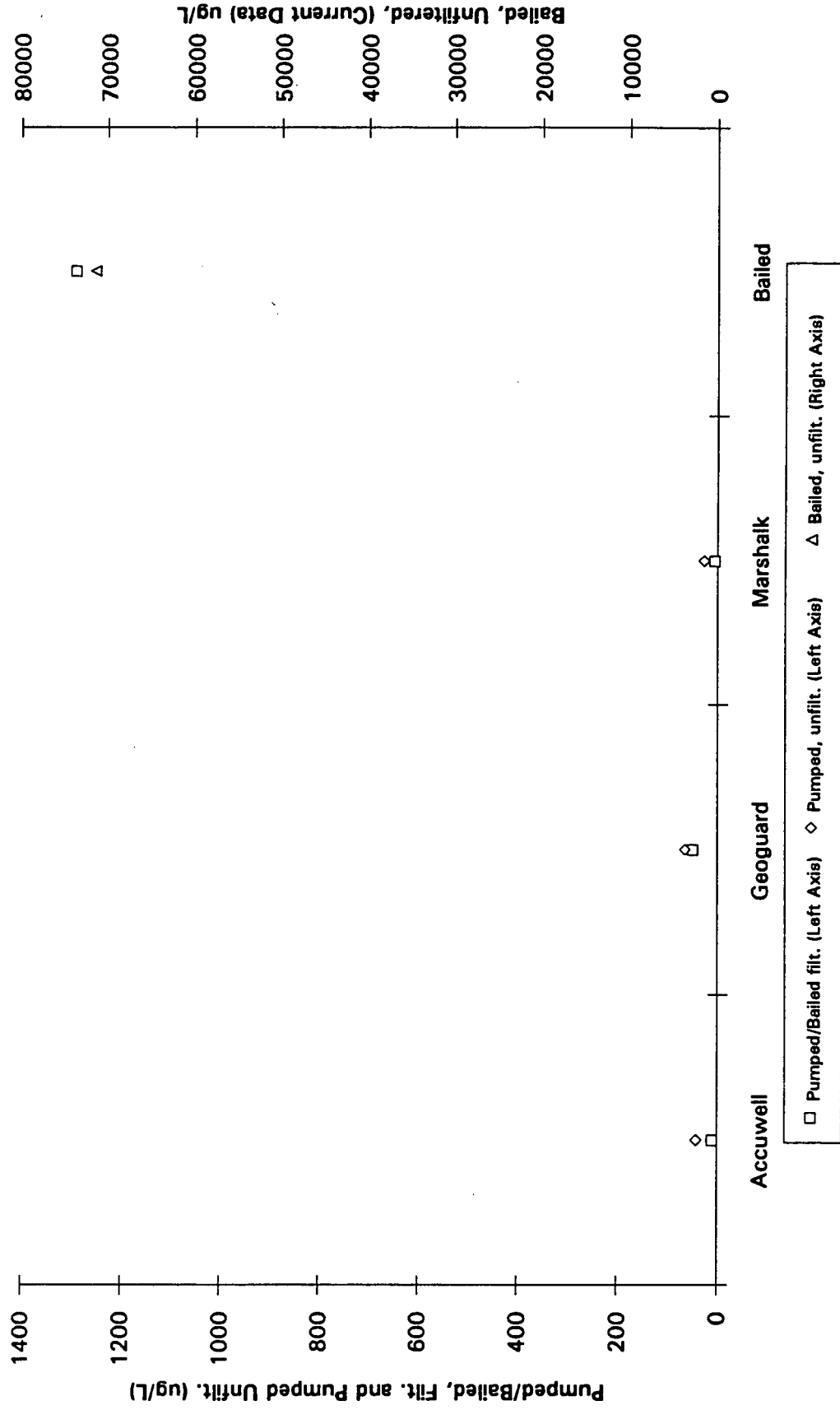


D 0018

9/27/94

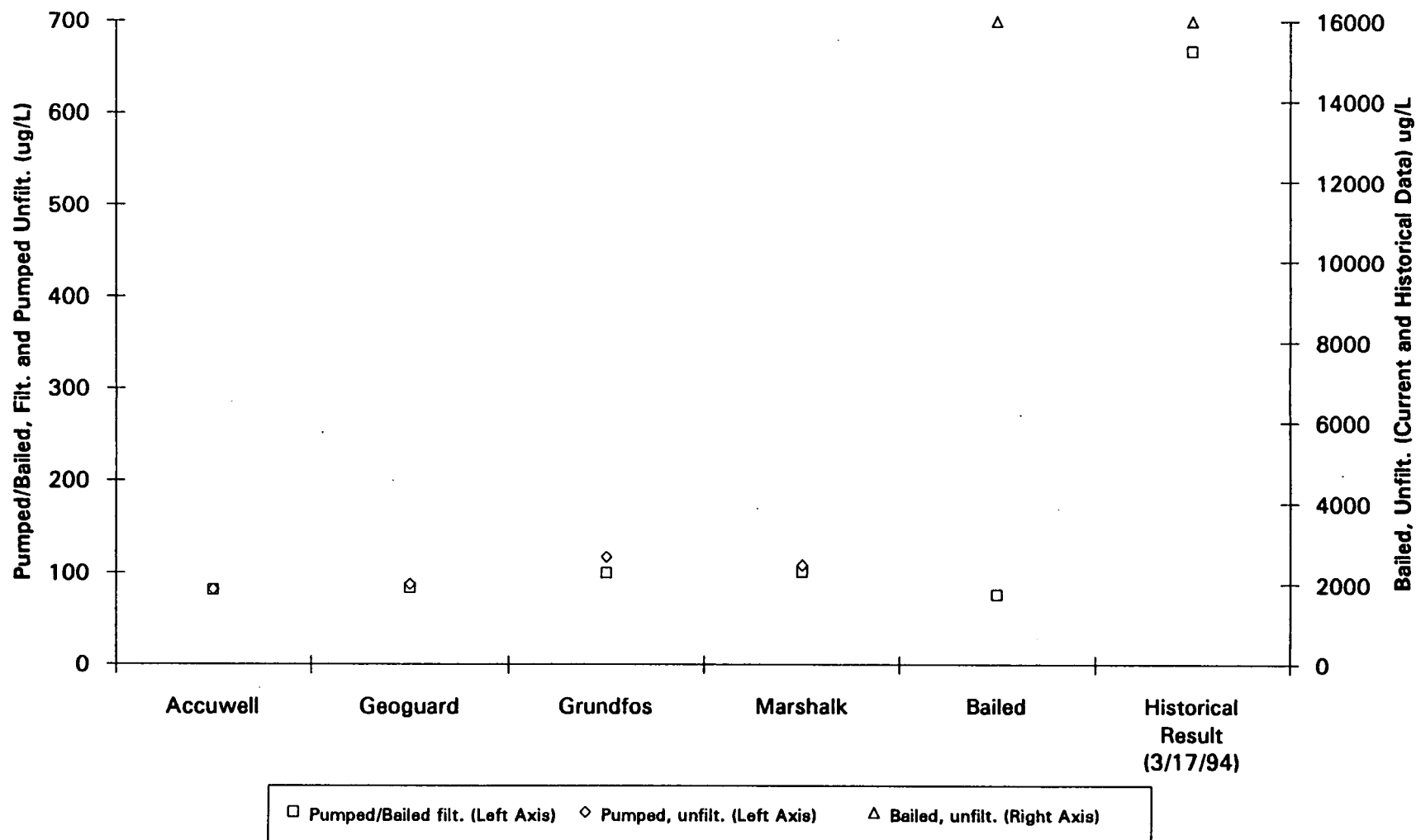
933-2715.7.710

Well 20591, Iron

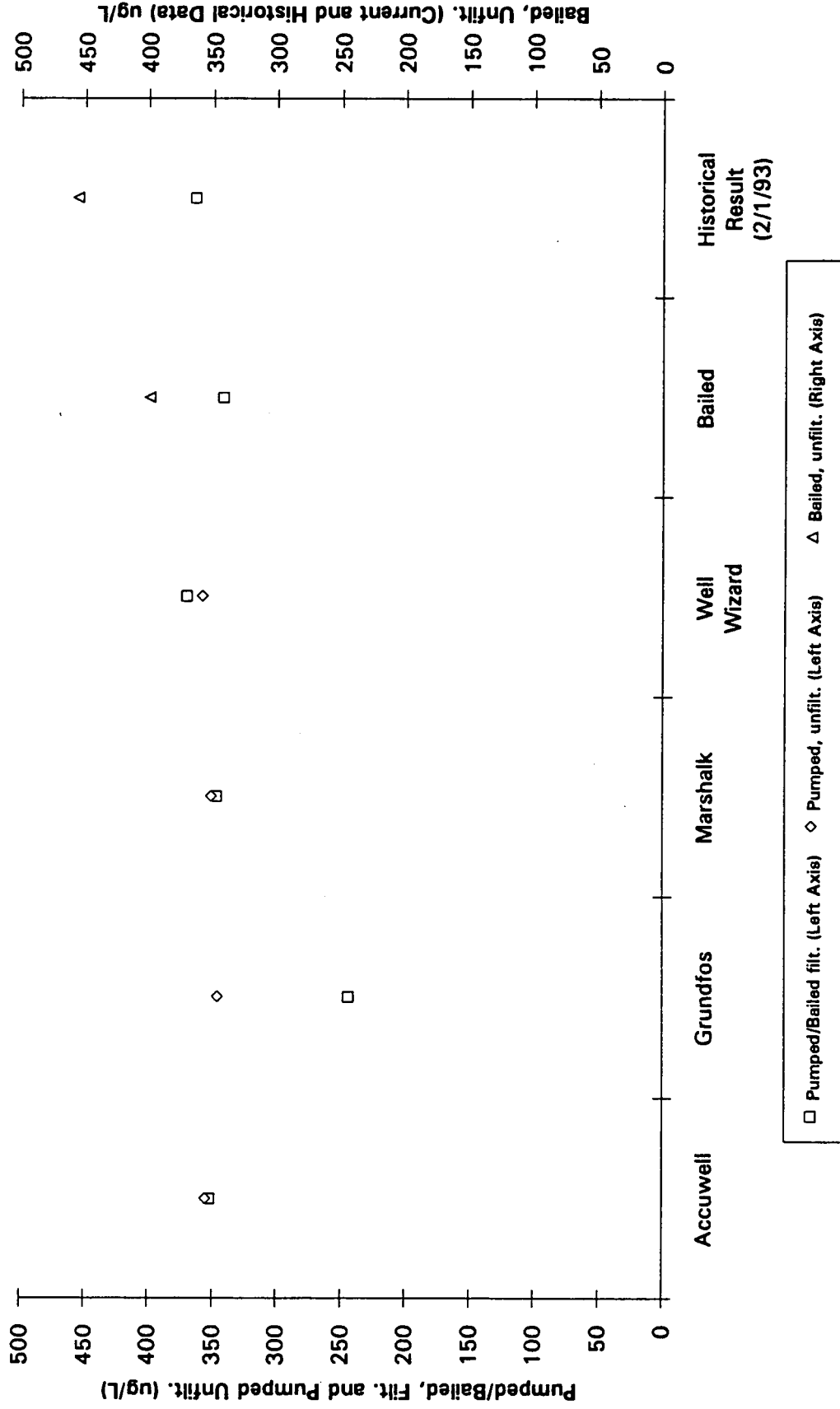


D 0019

Well 41691, Iron



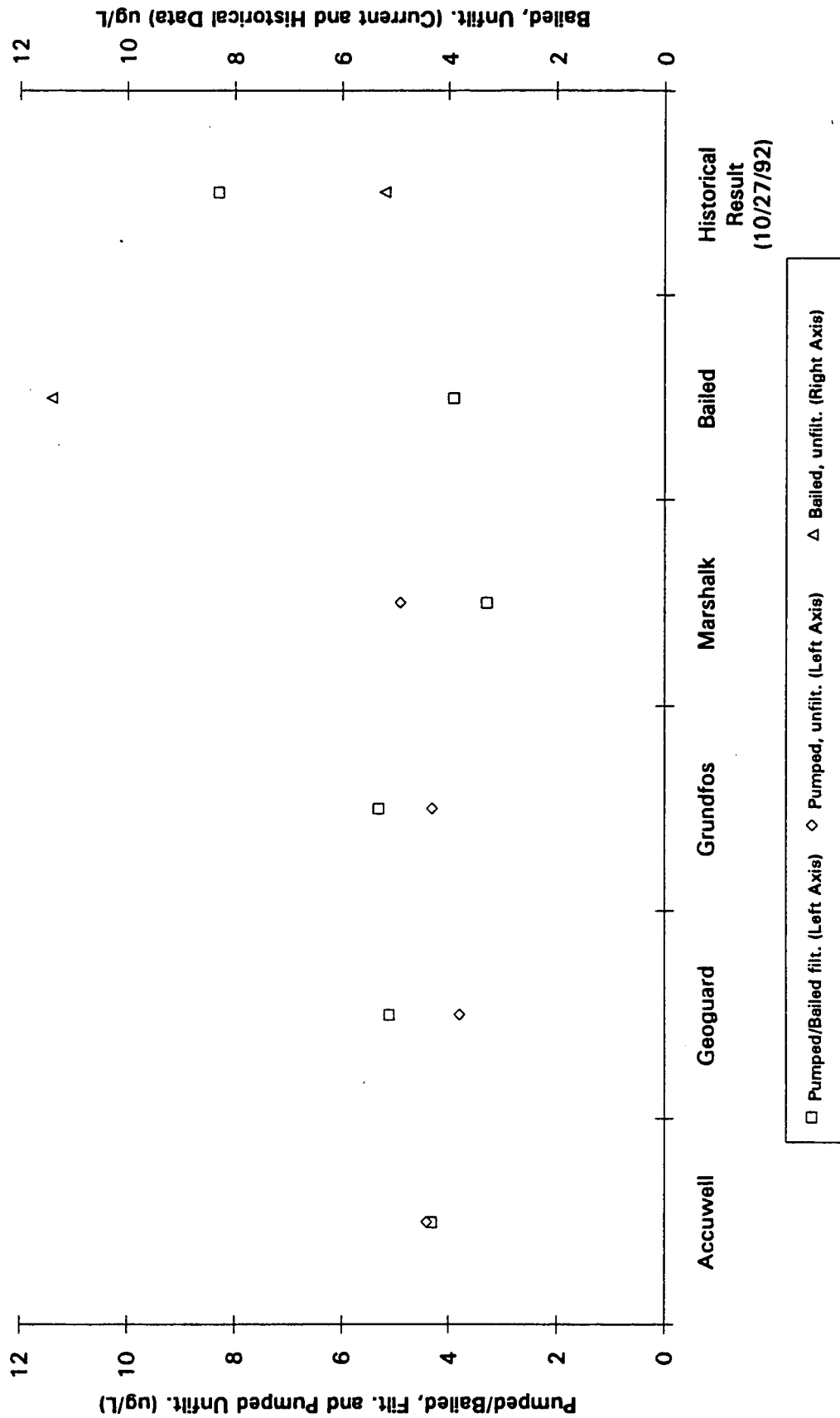
Well 1786, Lithium



9/27/94

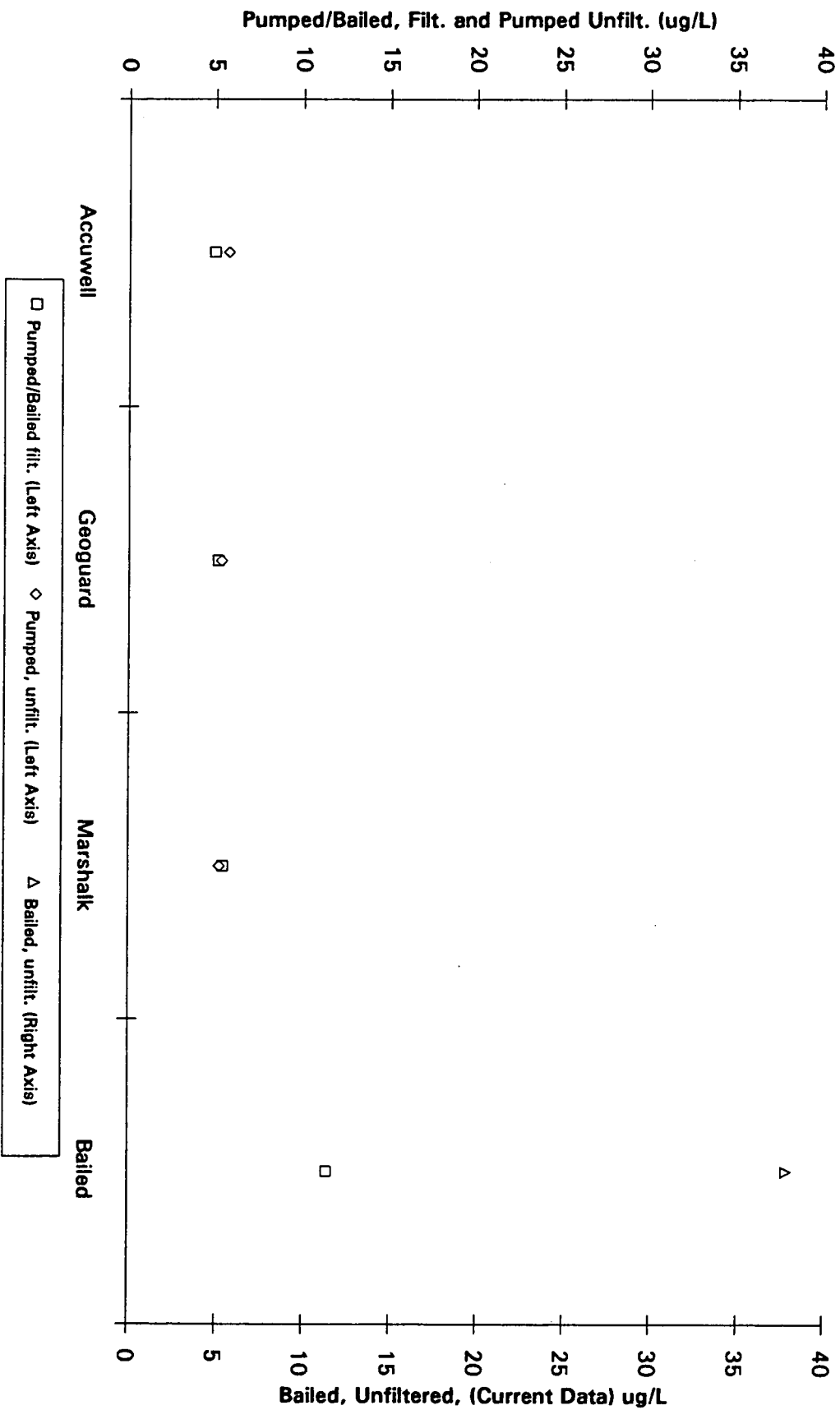
933-2715.7.710

Well 2587, Lithium



D 0022

Well 20591, Lithium

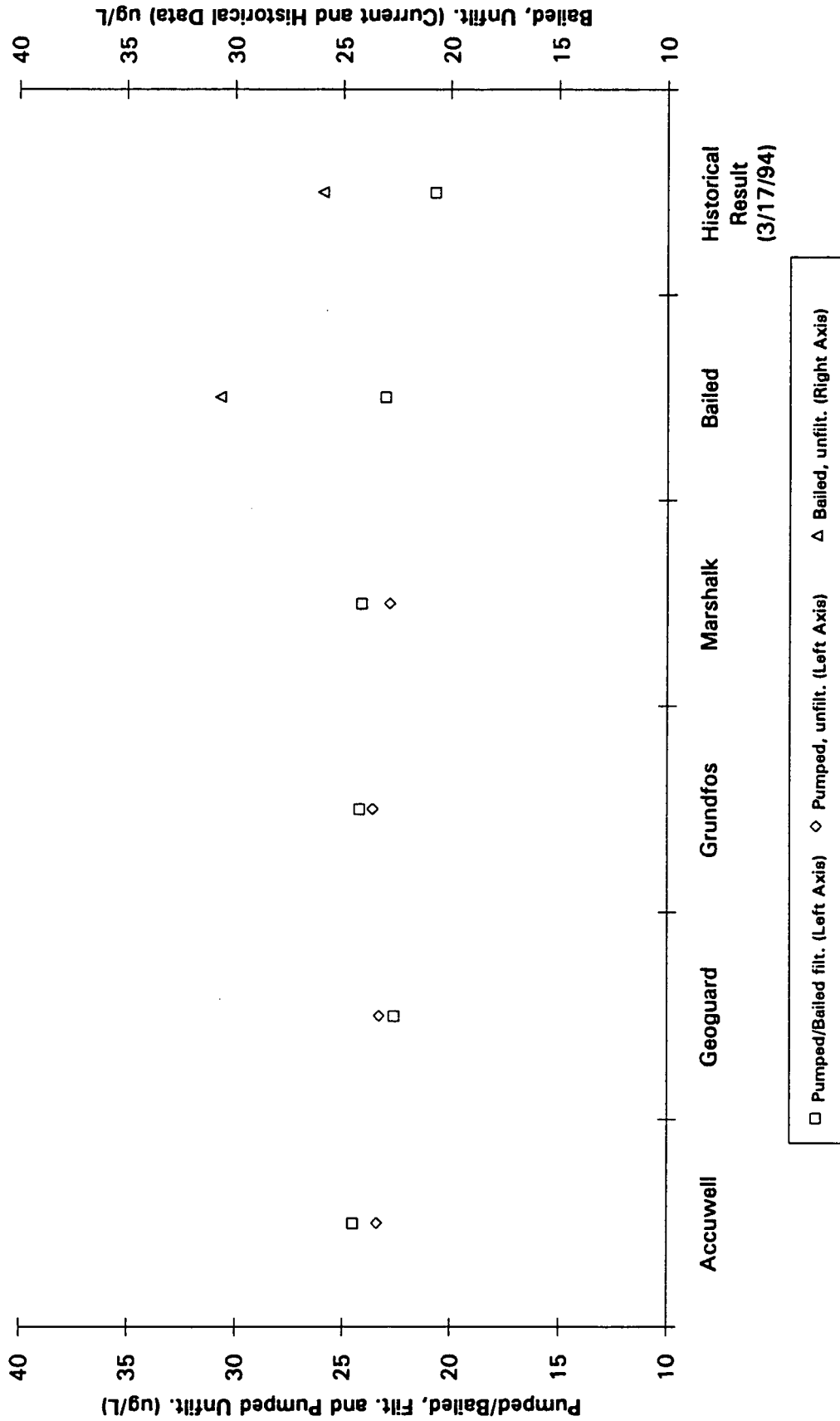


D 0023

9/27/94

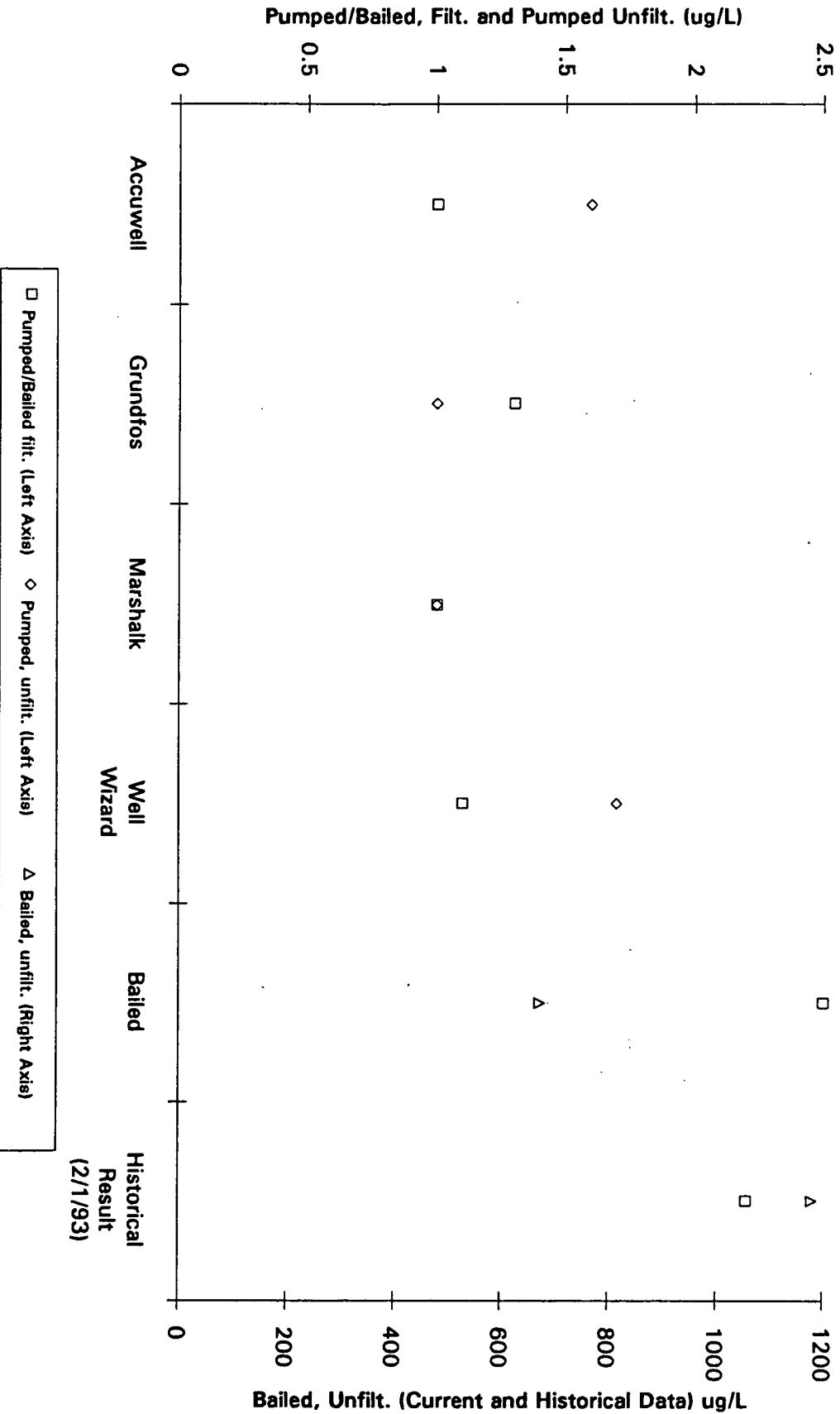
933-2715.7.710

Well 41691, Lithium



D 0024

Well 1786, Manganese

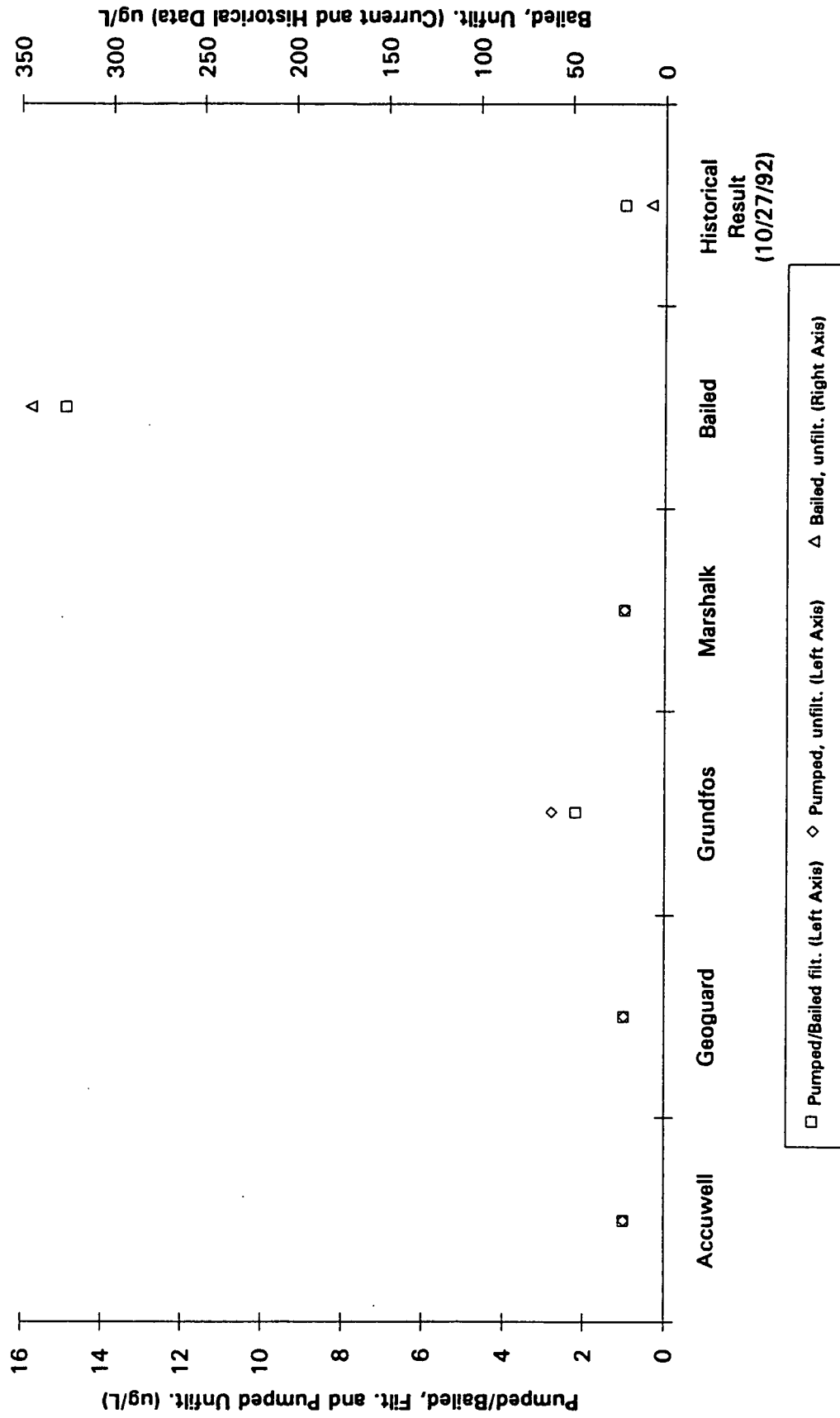


D 0025

9/27/94

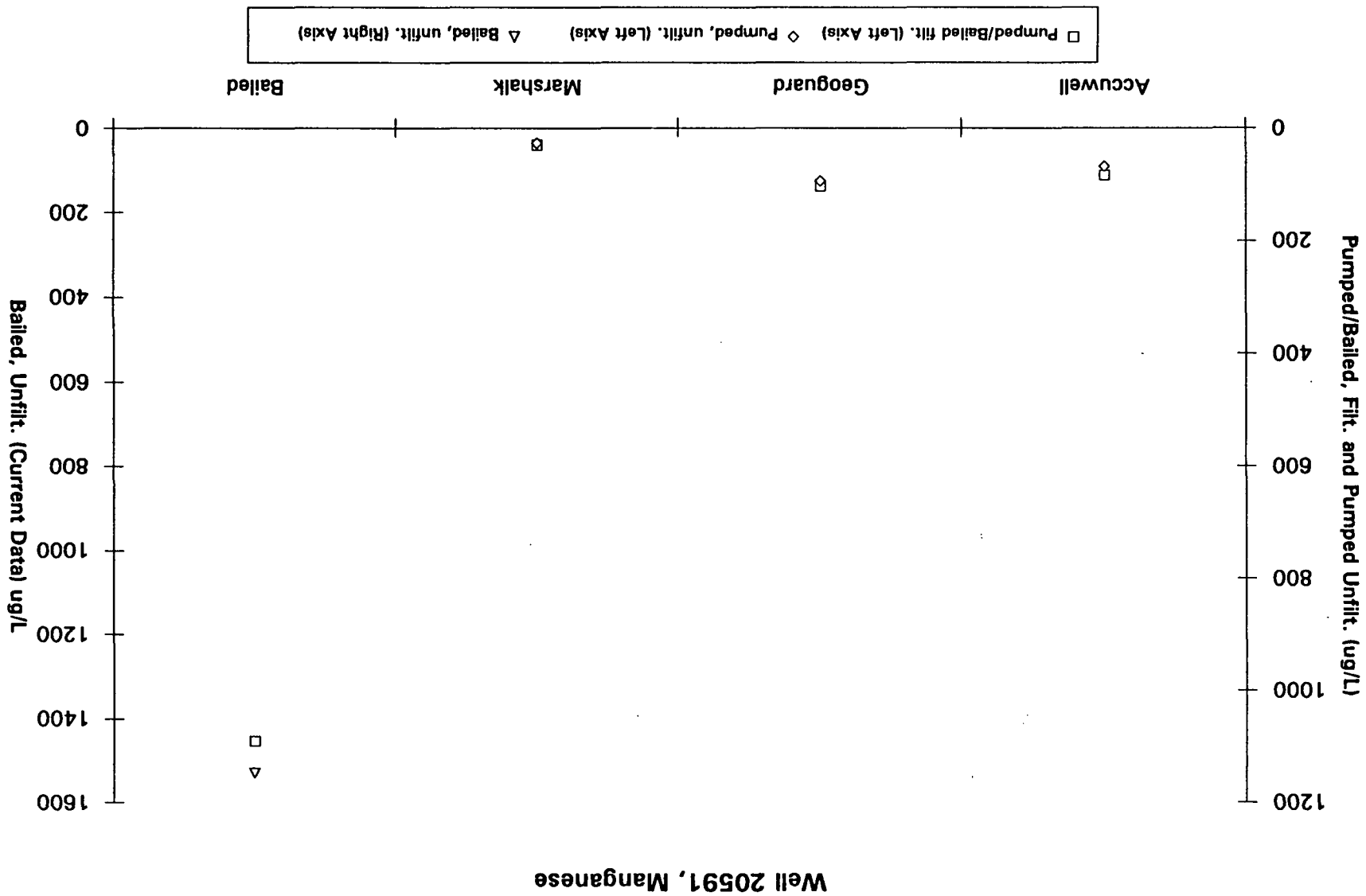
933-2715.7.710

Well 2587, Manganese



D 0026

D 0027



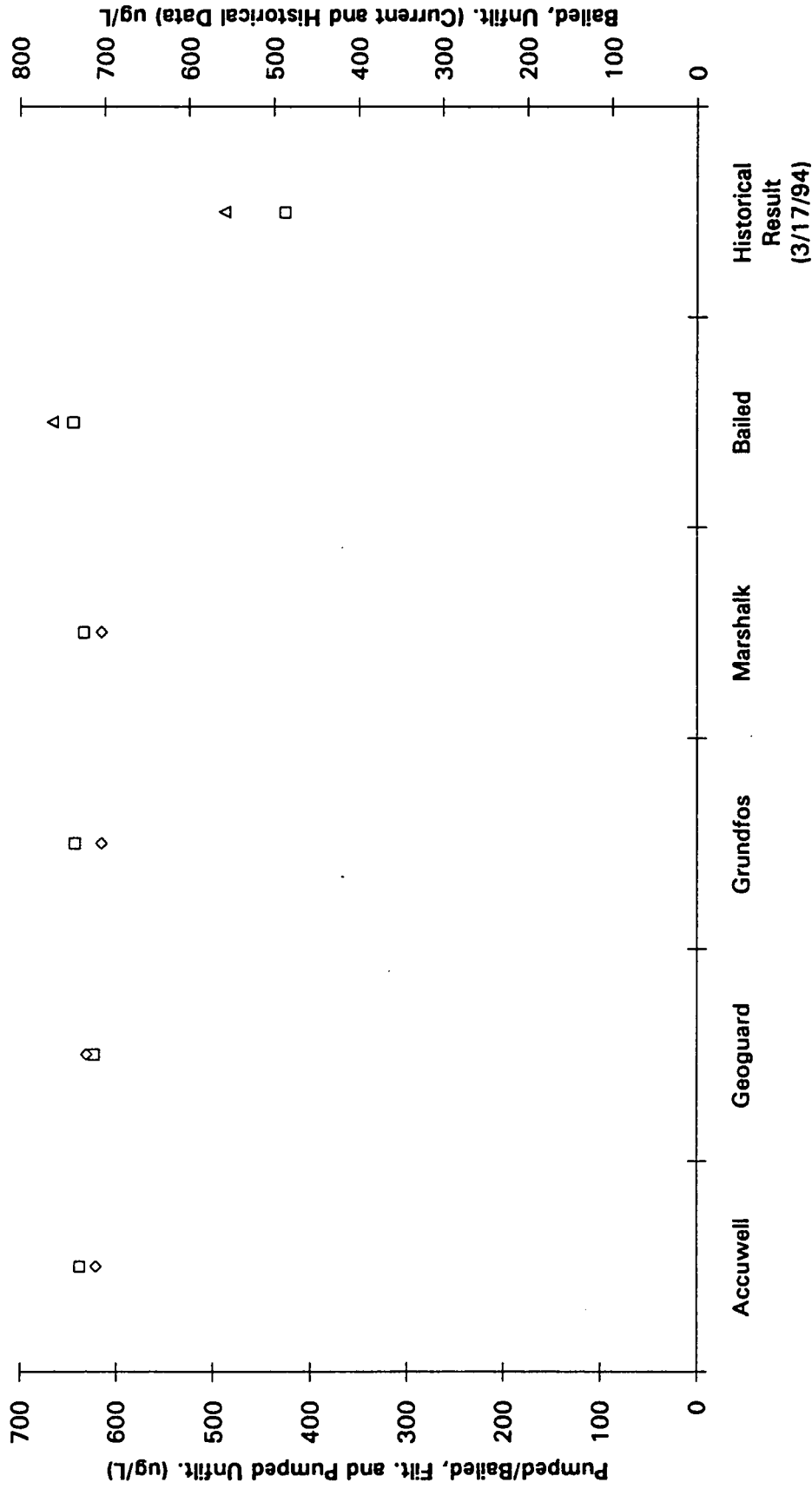
9/27/94

933-2715.7.710

9/27/94

933-2715.7.710

Well 41691, Manganese

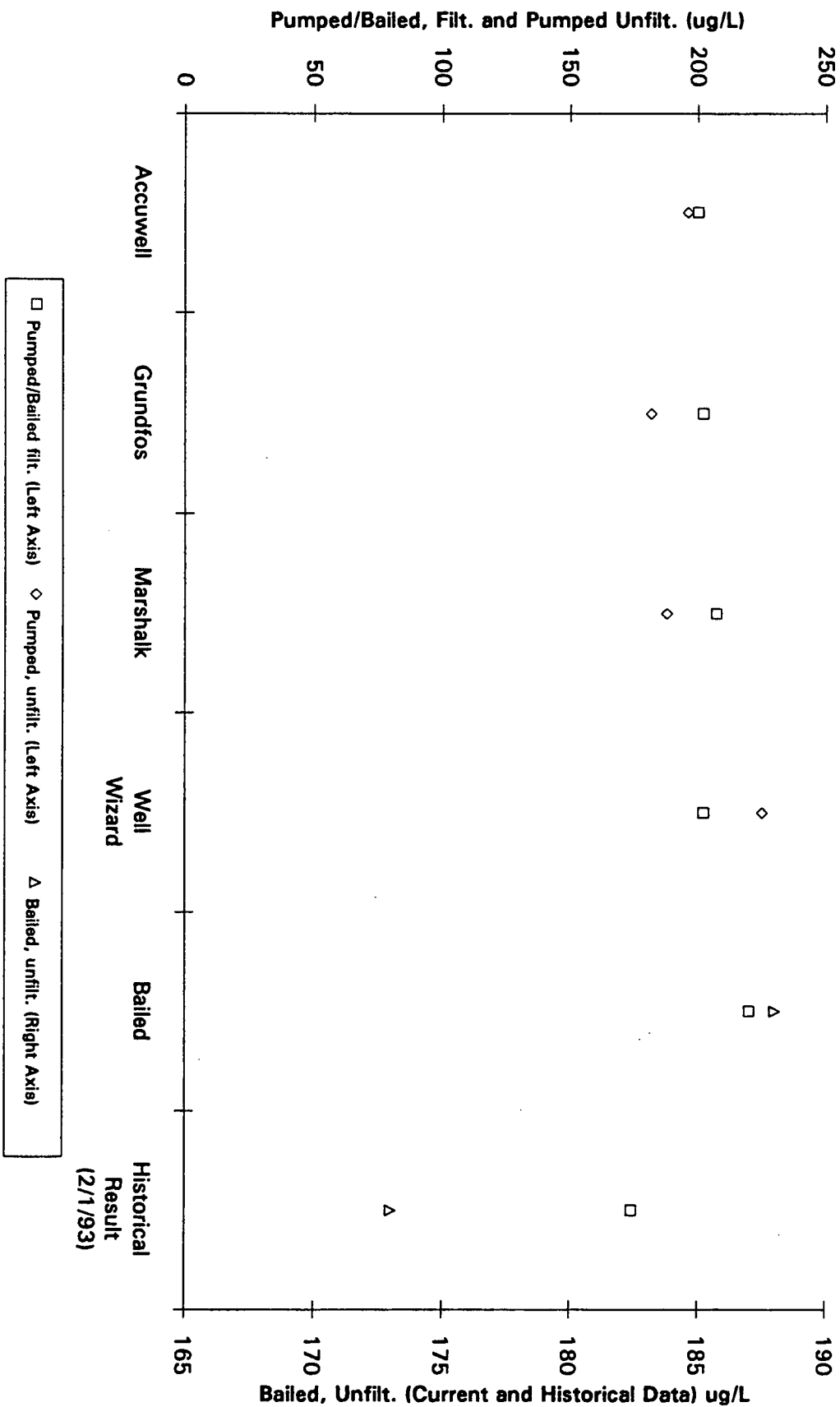


D 0028

9/27/94

933-2715.7.710

Well 1786, Selenium

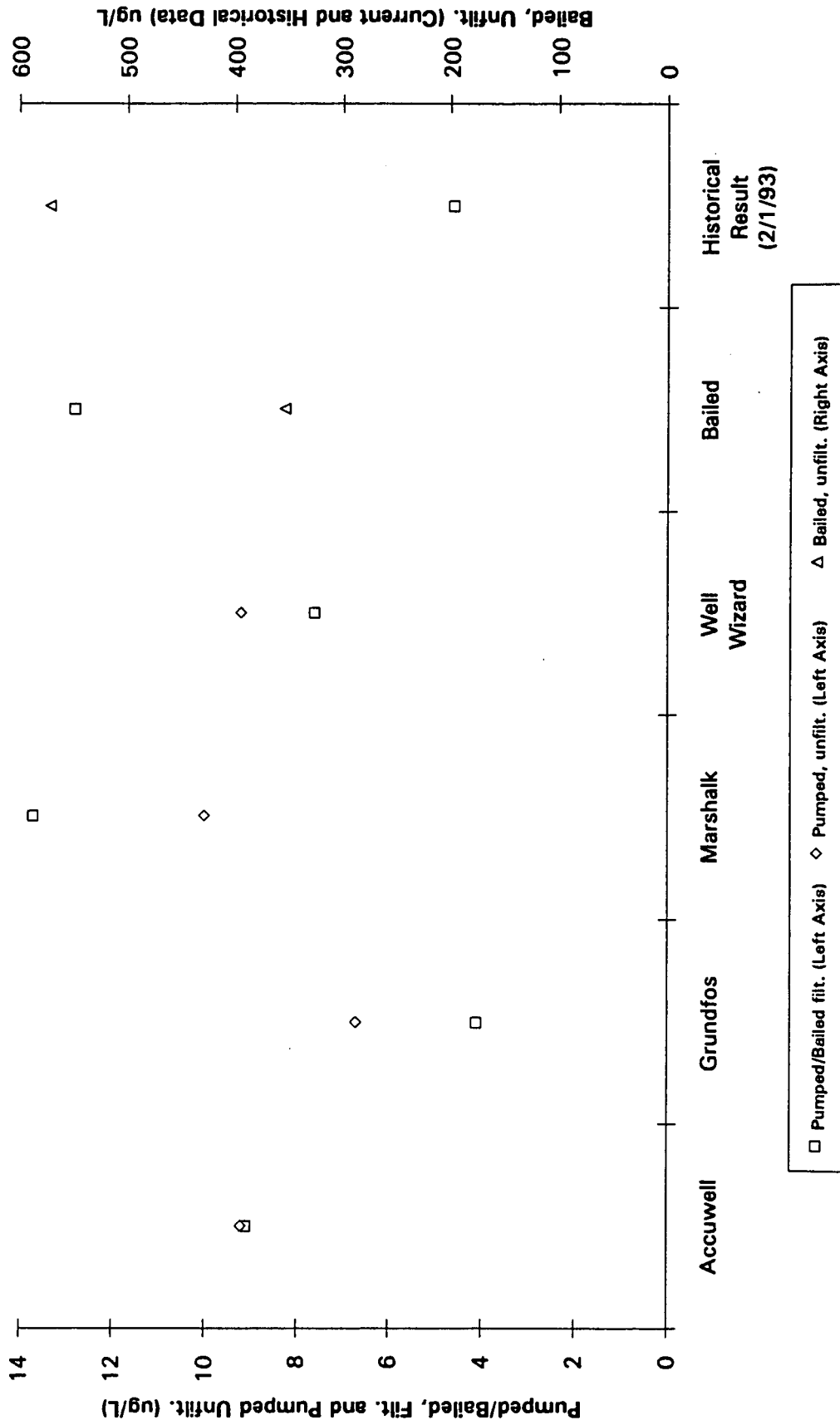


0029

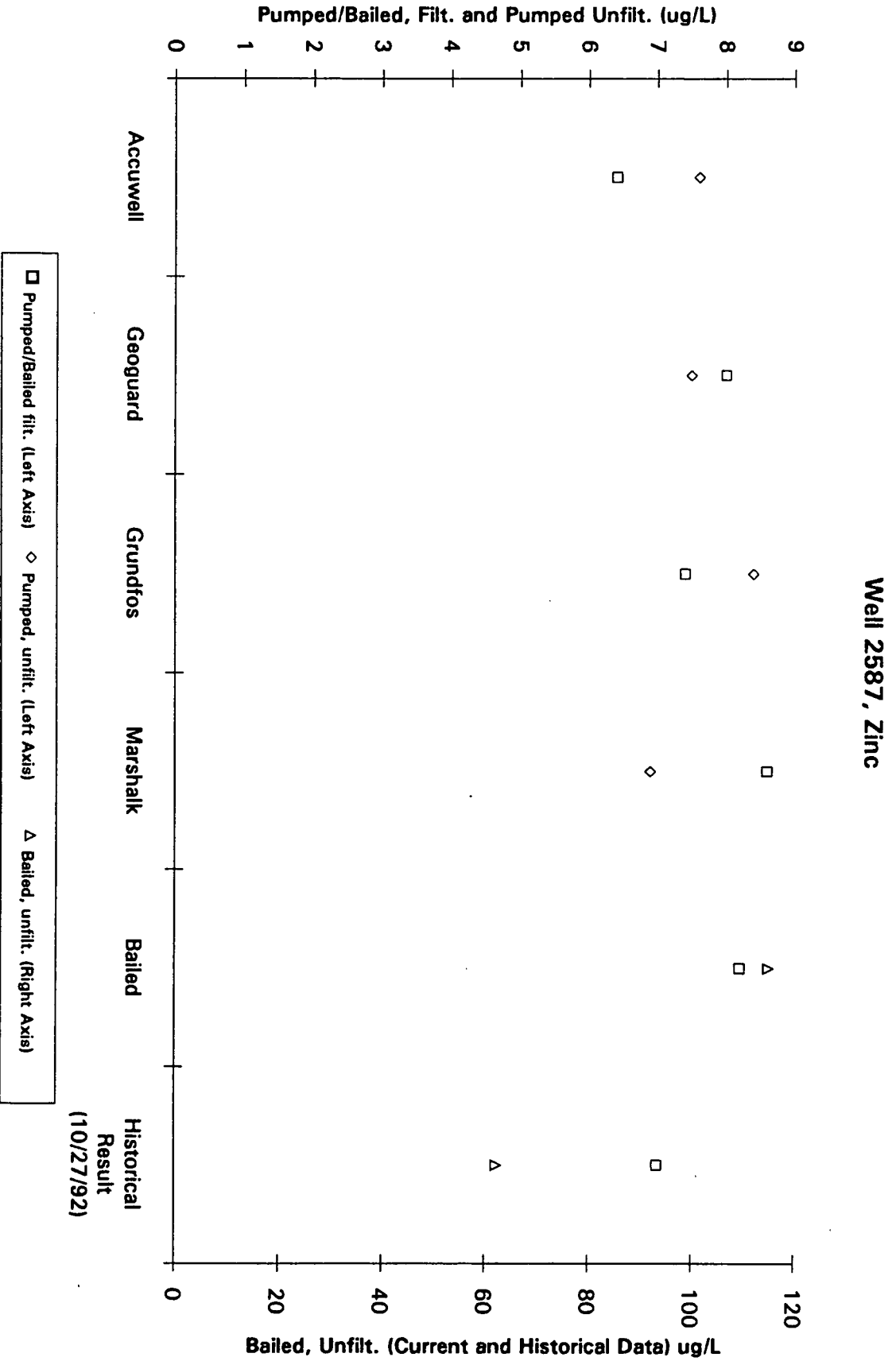
9/27/94

933-2715.7.710

Well 1786, Zinc

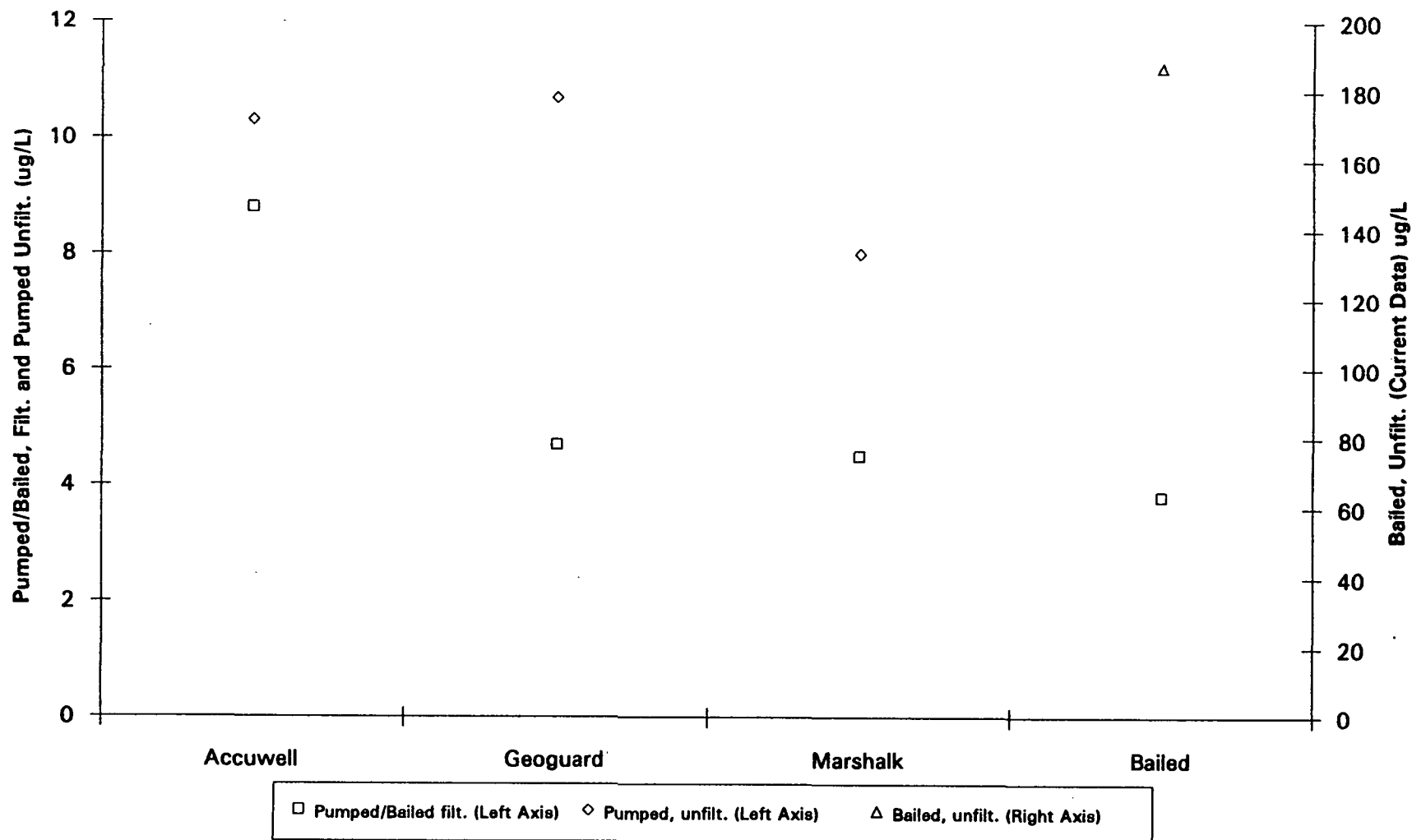


D 0030

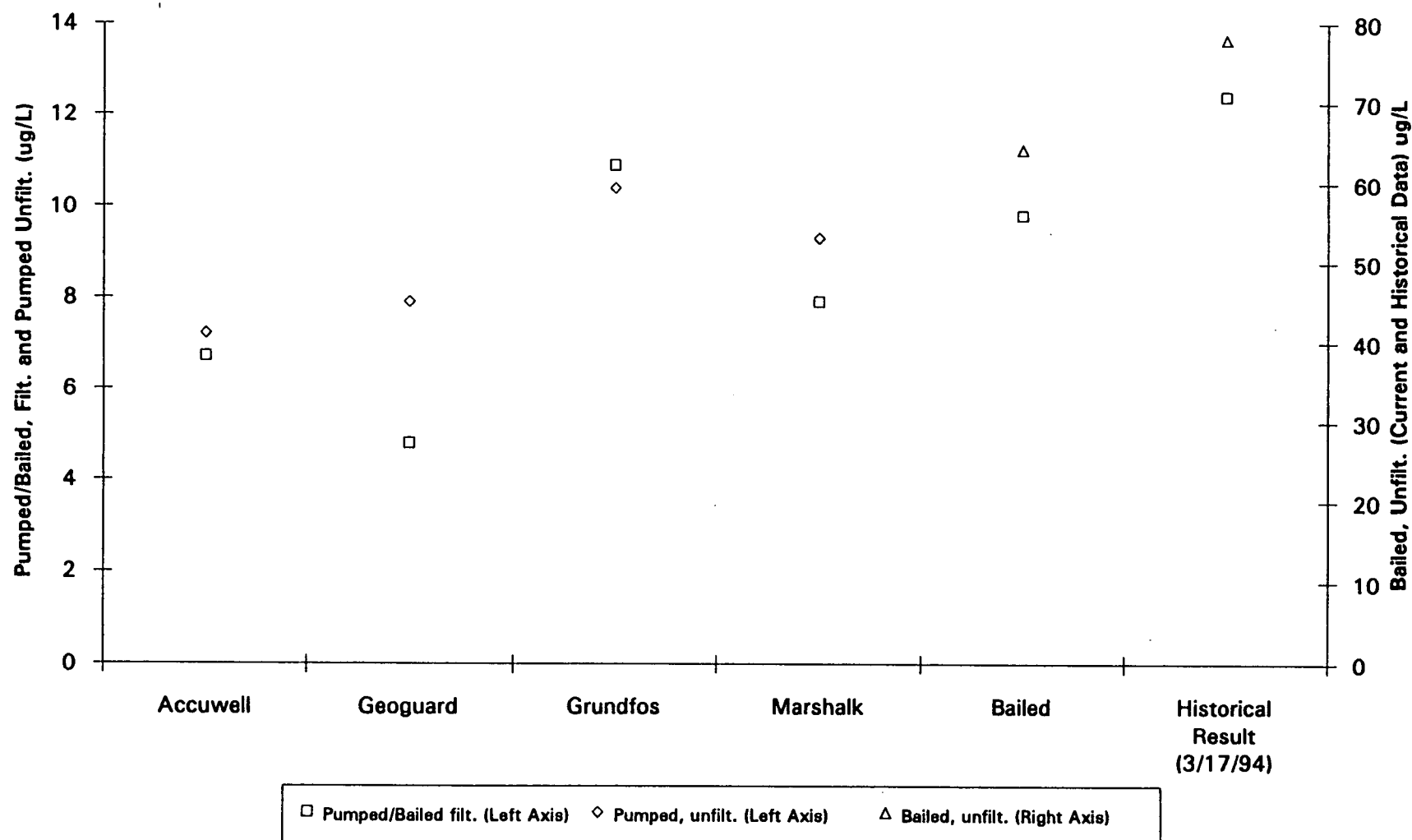


D 0031

Well 20591, Zinc



Well 41691, Zinc



D 0033

Analyte:		Gross Alpha		Gross Beta		U-233,234		U-235		U-238		Sr-89,90	
Units		pCi/L		pCi/L		pCi/L		pCi/L		pCi/L		pCi/L	
Field Prep.:		Filtered		Filtered		Filtered		Filtered		Filtered		Filtered	
Sample Type:		Pumped	Bailed	Pumped	Bailed	Pumped	Bailed	Pumped	Bailed	Pumped	Bailed	Pumped	Bailed
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	45.95		32.47		23.27		12.21		40.82		35.22	
1786	Grundfos	39.92				16.24				37.41			
1786	Marshalk	11.63				4.54				38.61			
1786	Well Wizard	44.98				22.47				38.71			
2587	Accuwell	3.658		1.436		1.844		1.858		2.387		1.794	
2587	Geoguard	1.032				0.656				2.597			
2587	Grundfos	3.039				2.516				2.112			
2587	Marshalk	2.408				3.974				2.129			
20591	Accuwell	1.775		1.941		14.28		6.03		0.77		0.326	
20591	Geoguard	0.791				12.13				1.347			
20591	Marshalk	3.123				15.85				0.741			
41691	Accuwell	3.154		2.827		6.802		5.893		0.192		-0.027	
41691	Geoguard	1.926				7.449				1.727			
41691	Grundfos	2.379				6.138				1.084			
41691	Marshalk	1.231				7.104				1.32			
1786	Accuwell	55.55		362.1		18.64		255.3		45.56		37.06	
1786	Grundfos	41.79				20.33				40.53			
1786	Marshalk	2.017				9.836				38.98			
1786	Well Wizard	41.8				12.81				38.77			
2587	Accuwell	5.802		60.32		2.398		35.71		2.321		2.816	
2587	Geoguard	-0.174				0.973				2.154			
2587	Grundfos	2.582				3.917				2.499			
2587	Marshalk	4.079				2.533				2.147			
20591	Accuwell	3.24		142.5		13.61		143.1		0.897		3.081	
20591	Geoguard	0.568				10.35				1.04			
20591	Marshalk	1.863				14.62				1.272			
41691	Accuwell	3.459		18.28		7.078		22.73		1.428		1.393	
41691	Geoguard	1.266				7.444				1.172			
41691	Grundfos	2.562				7.496				1.361			
41691	Marshalk	2.708				6.919				1.282			

(1) - Indicates that Strontium-89/90 and Total Radiocesium were not requested on the chain-of-custody form.

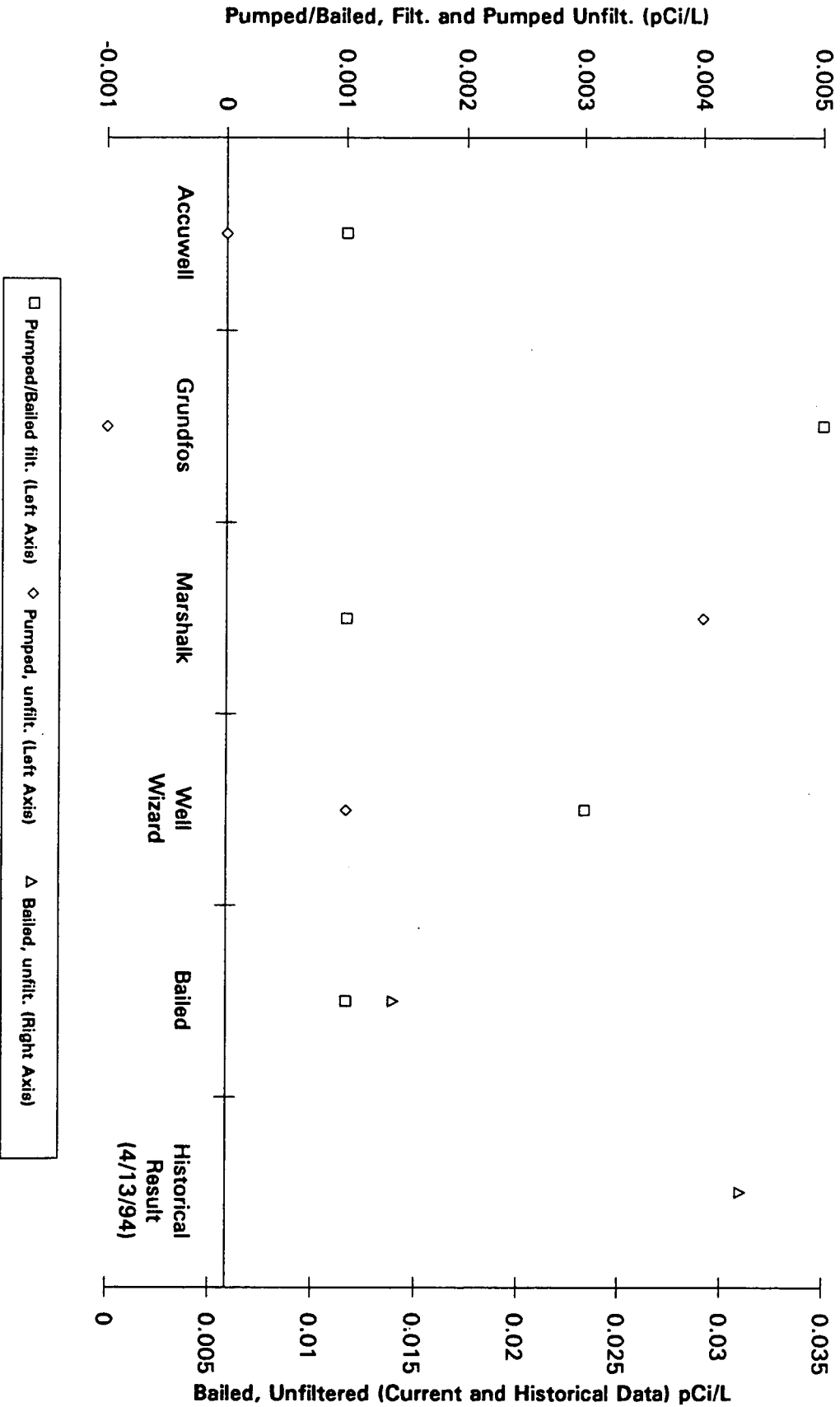
000034

Analyte:		Pu-239,240				Am-241				Cs-137			
Units		pCi/L				pCi/L				pCi/L			
Field Prep.:		Filtered				Filtered				Filtered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	0.003		0.002		0.001		0.001		0.089		0.061	
1786	Grundfos	-0.001				0.005				0.083			
1786	Marshalk	0.003				0.001				-0.08			
1786	Well Wizard	0.001				0.003				-0.006			
2587	Accuwell	0.001		0.001		0.001		0.001		0.042		-0.078	
2587	Geoguard	0.001				-0.004				-0.104			
2587	Grundfos	-0.002				0.004				0.085			
2587	Marshalk	0.002				0.001				-0.082			
20591	Accuwell	0.001		0.001		0		0.002		(1)		0.063	
20591	Geoguard	0.002				0.005				0.163			
20591	Marshalk	0.006				0.001				(1)			
41691	Accuwell	0.002		0		0.002		0.004		-0.121		0.109	
41691	Geoguard	0				0				-0.038			
41691	Grundfos	0				0.003				-0.125			
41691	Marshalk	0.002				-0.001				0.081			
Analyte:		Pu-239,240				Am-241				Cs-137			
Units		pCi/L				pCi/L				pCi/L			
Field Prep.:		Unfiltered				Unfiltered				Unfiltered			
Sample Type:		Pumped		Bailed		Pumped		Bailed		Pumped		Bailed	
Well	Pump	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1786	Accuwell	0.001		0.001		0		0.014		-0.078		-0.055	
1786	Grundfos	-0.001				-0.001				-0.107			
1786	Marshalk	0				0.004				0.023			
1786	Well Wizard	0				0.001				-0.118			
2587	Accuwell	-0.001		-0.002		0		0.004		0.23		0.074	
2587	Geoguard	0				0				0.093			
2587	Grundfos	0.001				0.001				0.049			
2587	Marshalk	-0.001				0.001				-0.095			
20591	Accuwell	0.003		0.226		0.002		0.047		(1)		0.129	
20591	Geoguard	0.001				-0.002				-0.054			
20591	Marshalk	-0.001				0.001				(1)			
41691	Accuwell	0		0.015		-0.001		0.012		-0.022		-0.147	
41691	Geoguard	0.001				0.001				-0.042			
41691	Grundfos	0				0.002				0.09			
41691	Marshalk	0.007				0.002				0.017			

(1) - Indicates that Strontium-89/90 and Total Radiocesium were not requested on the chain-of-custody form.

000035

Well 1786, Americium-241

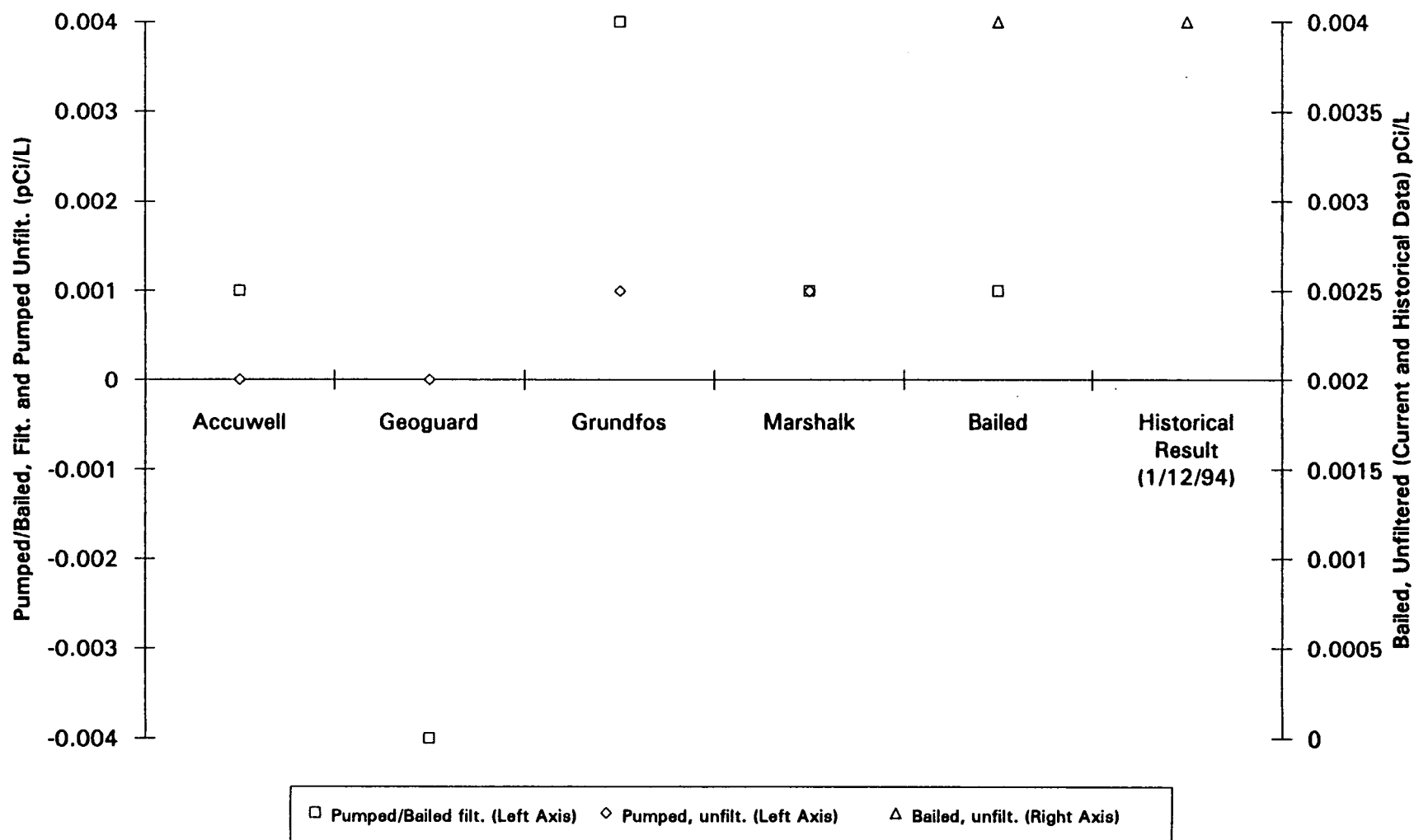


D 0036

9/27/94

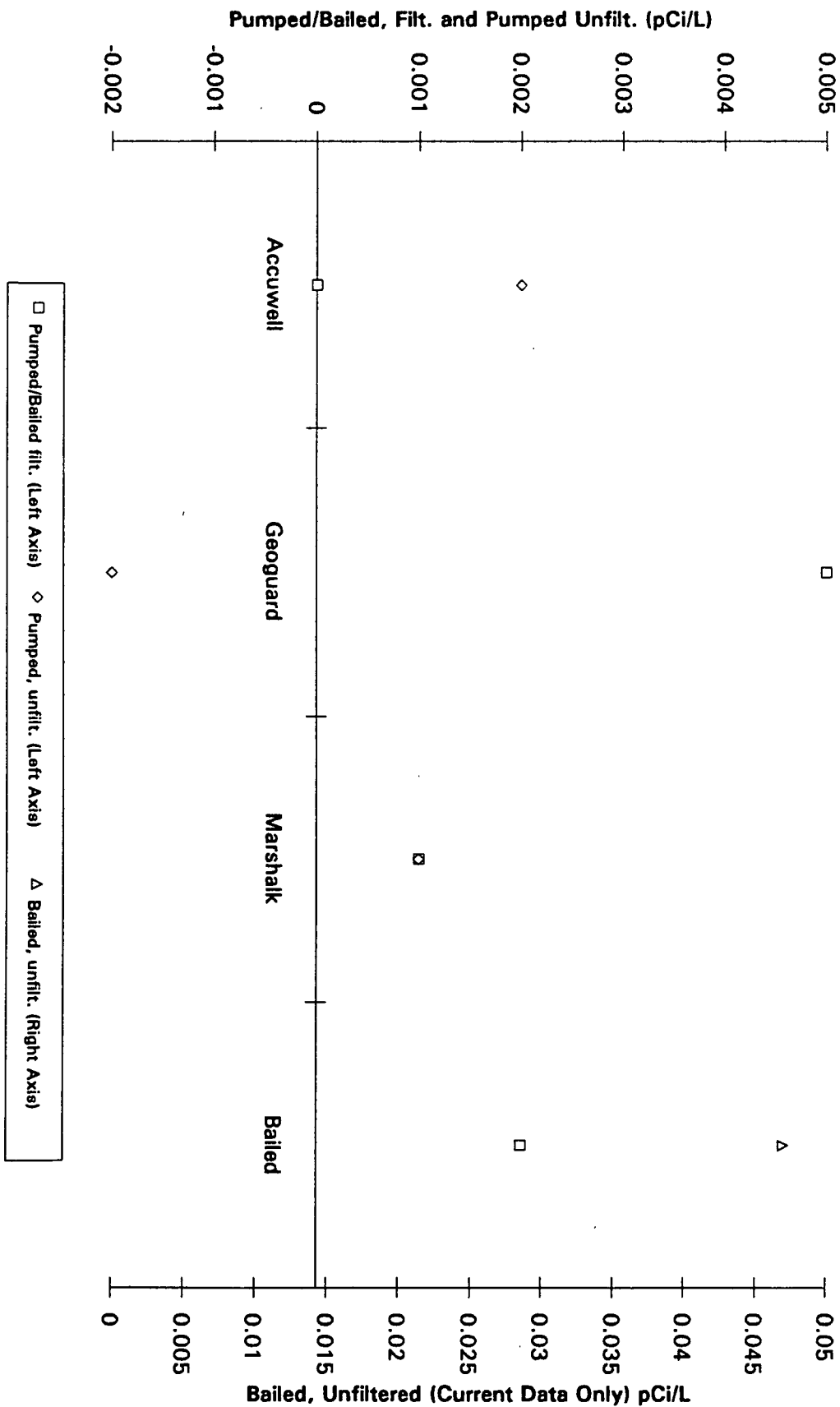
933-2715.7.710

Well 2587, Americium-241



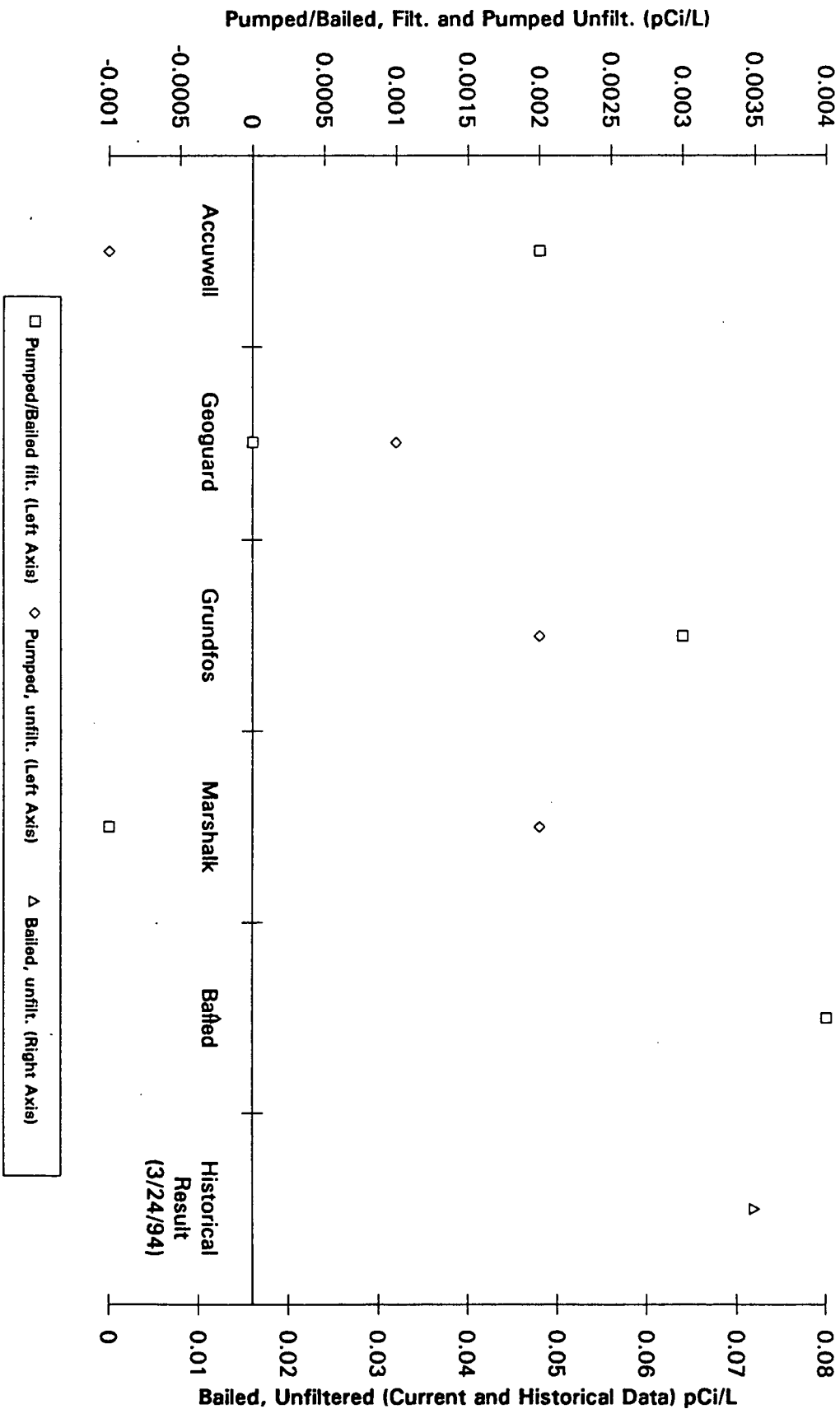
D 0037

Well 20591, Americium-241



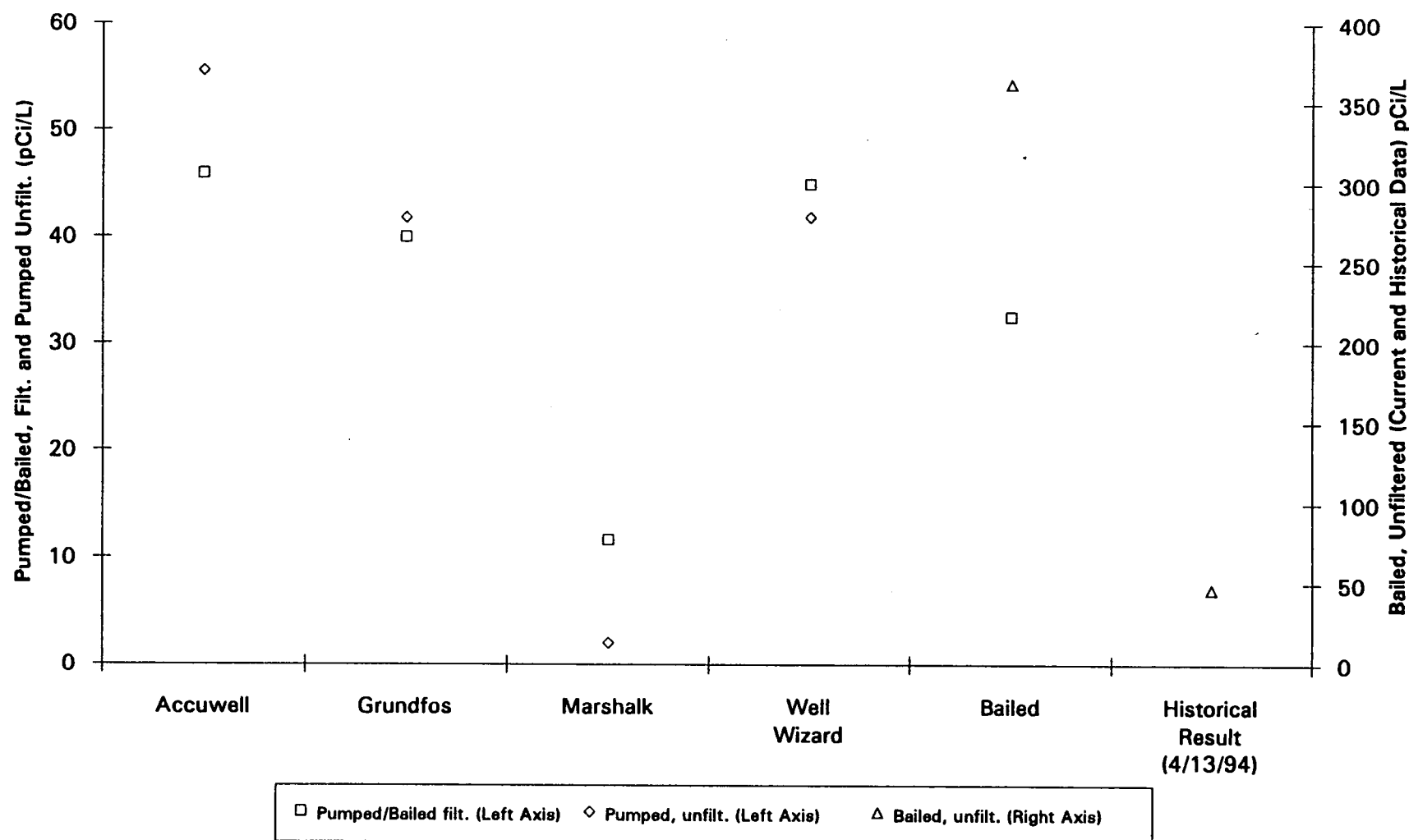
D 0038

Well 41691, Americium-241

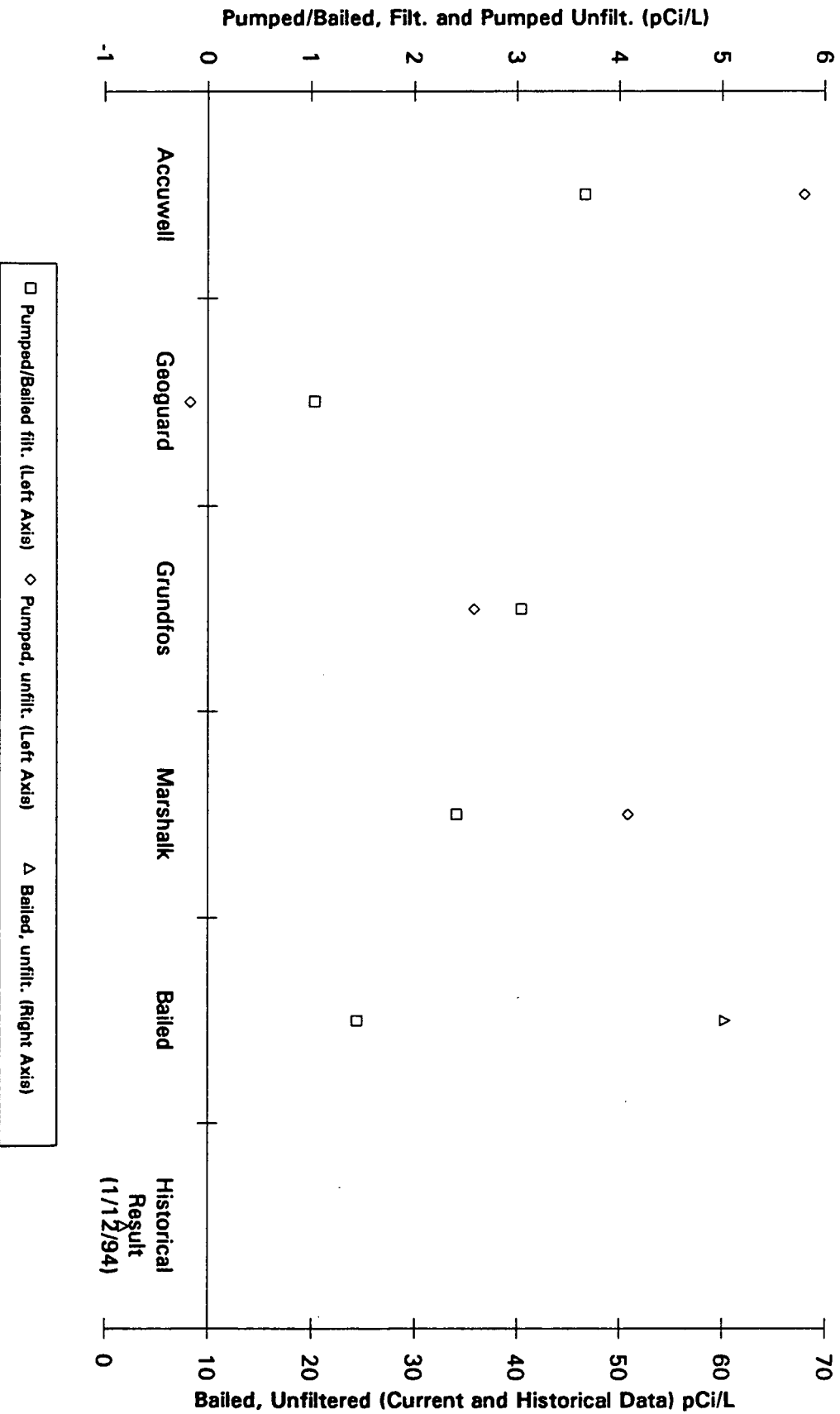


D 0039

Well 1786, Gross Alpha

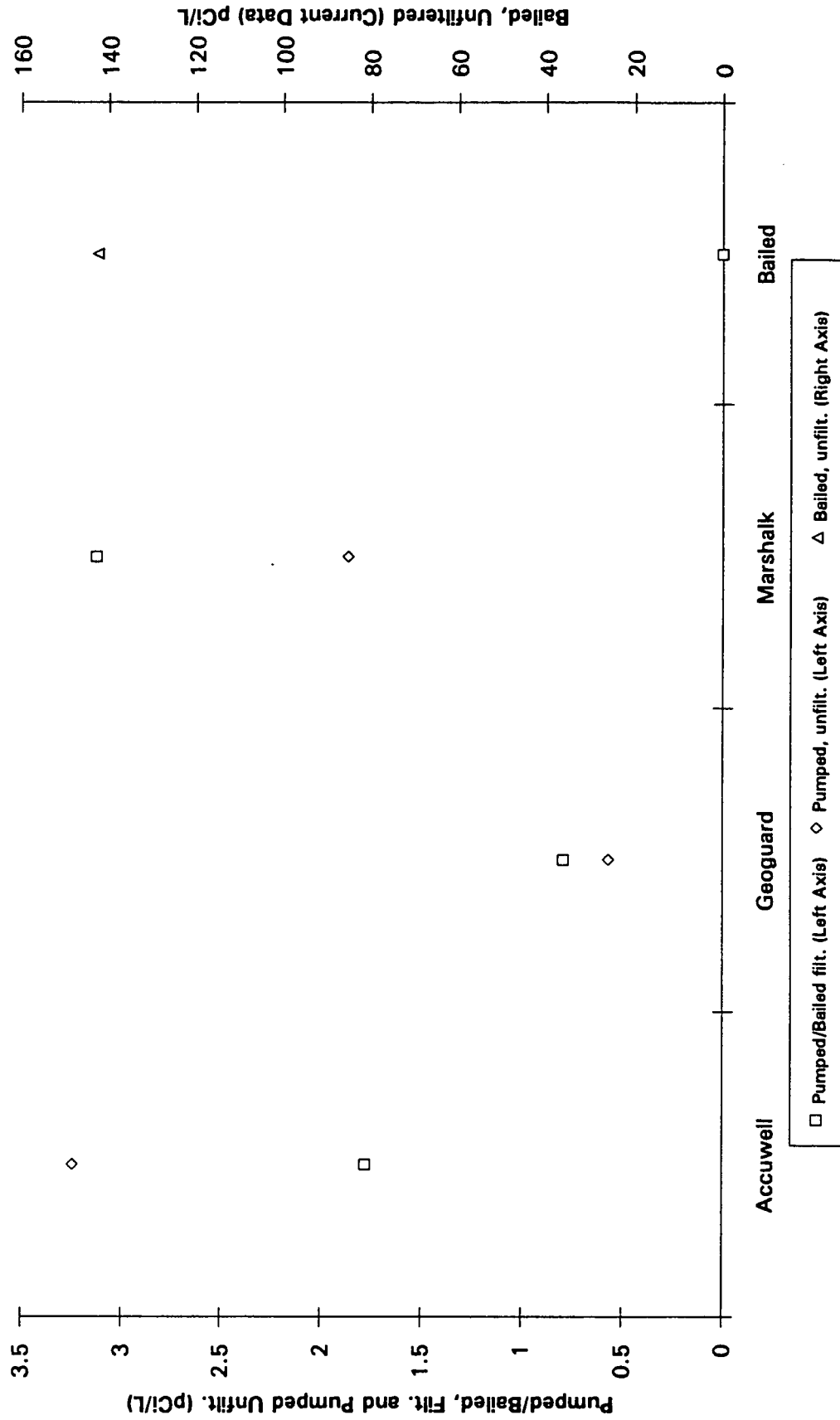


Well 2587, Gross Alpha

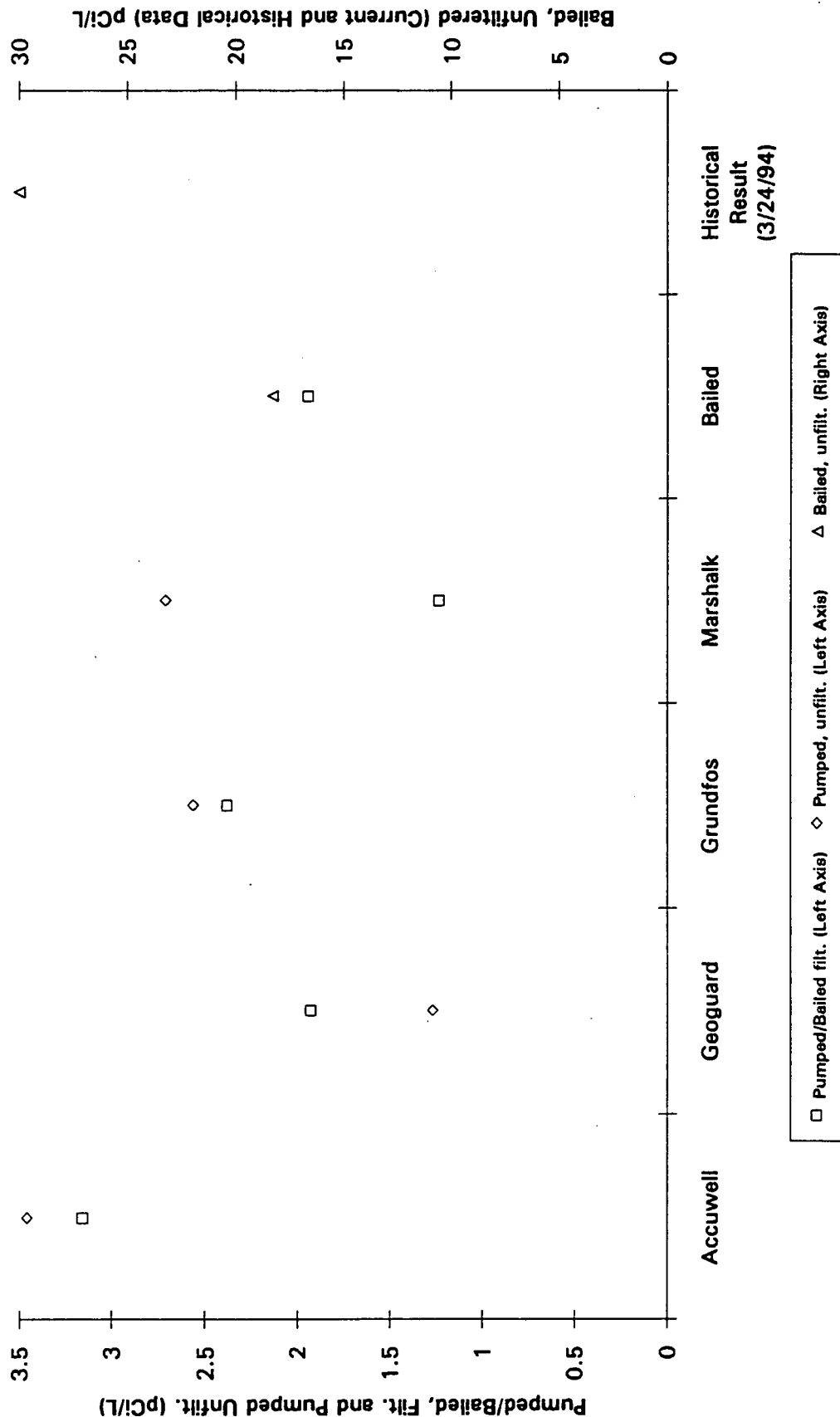


D 0041

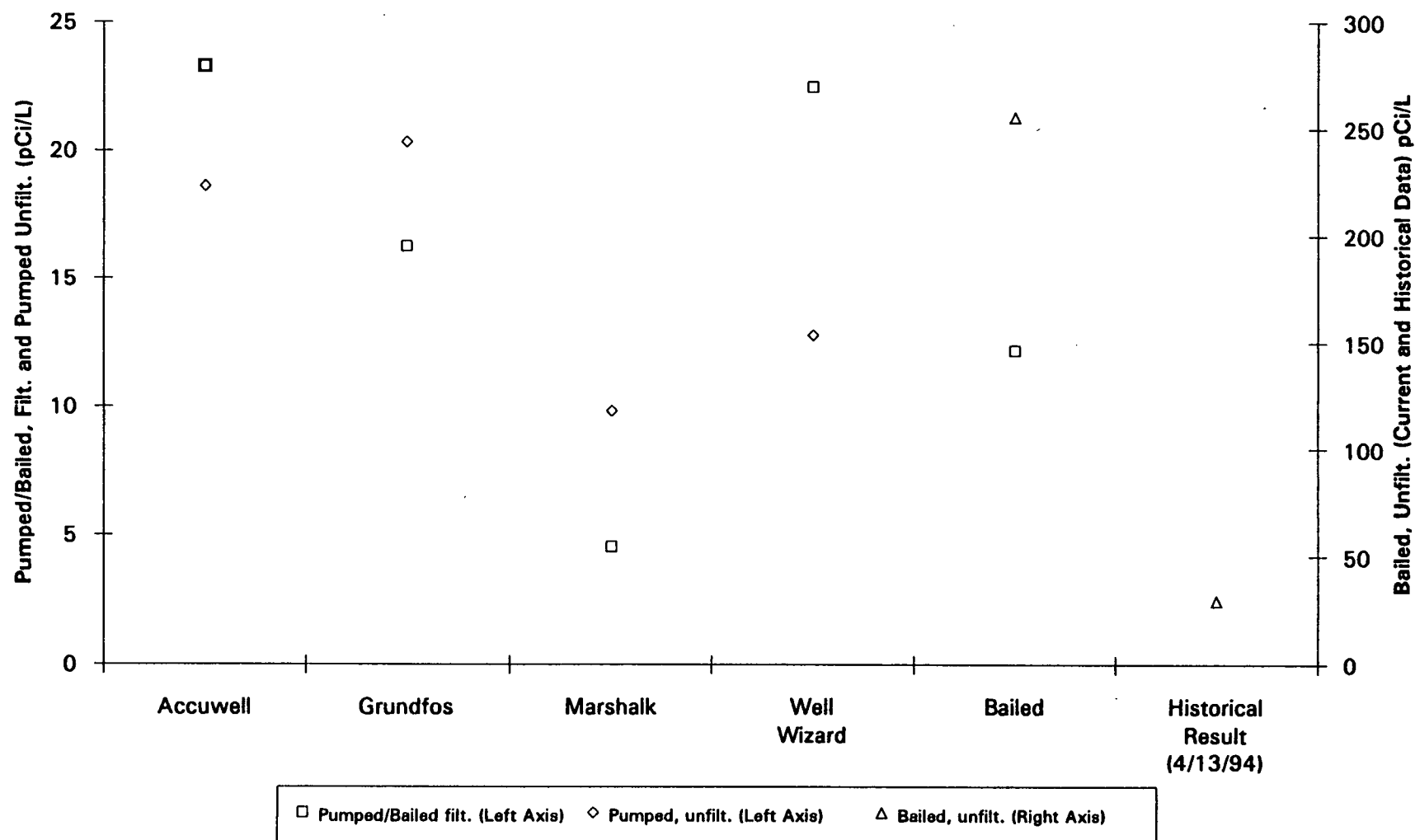
Well 20591, Gross Alpha



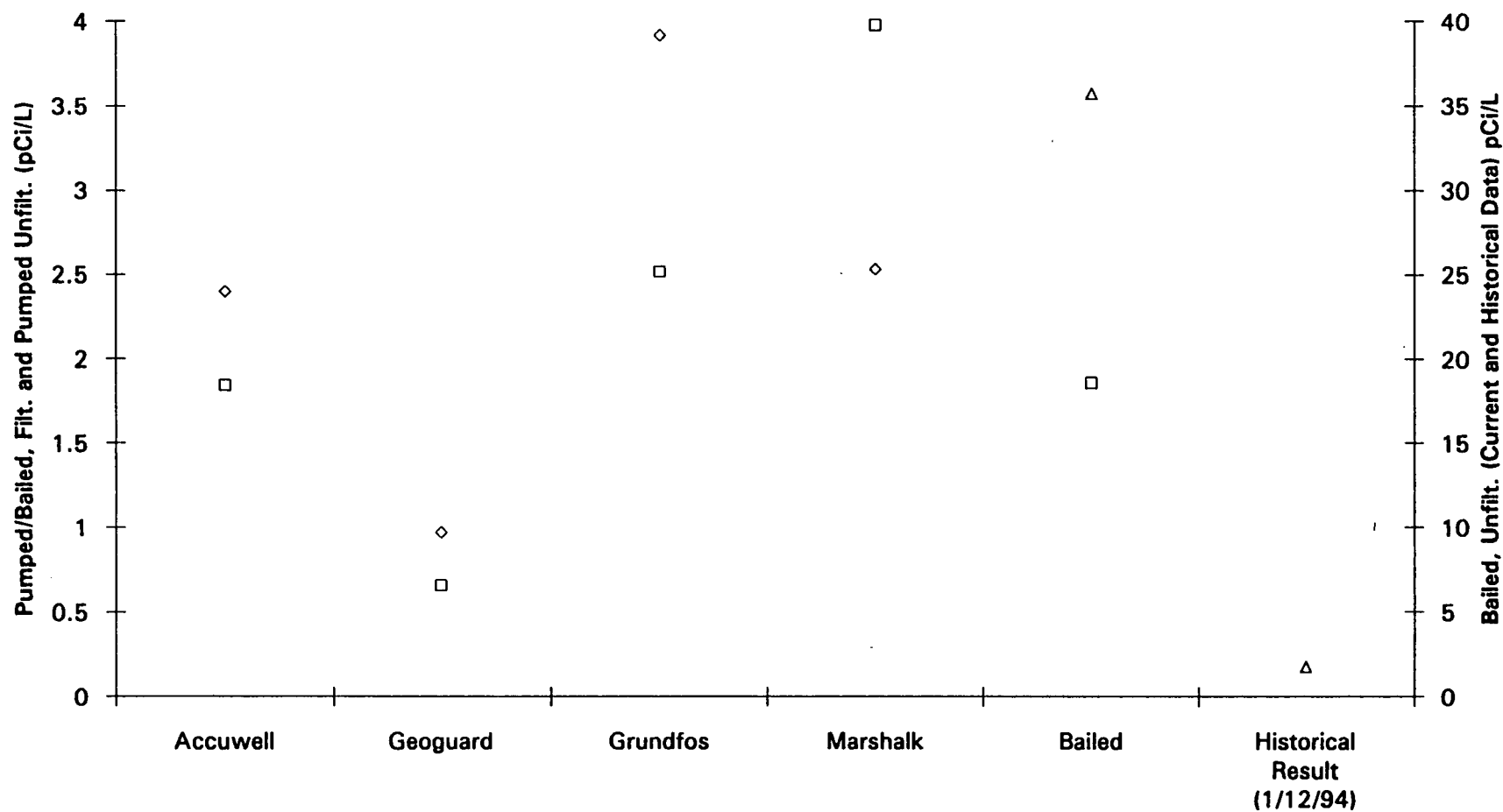
Well 41691, Gross Alpha



Well 1786, Gross Beta



Well 2587, Gross Beta

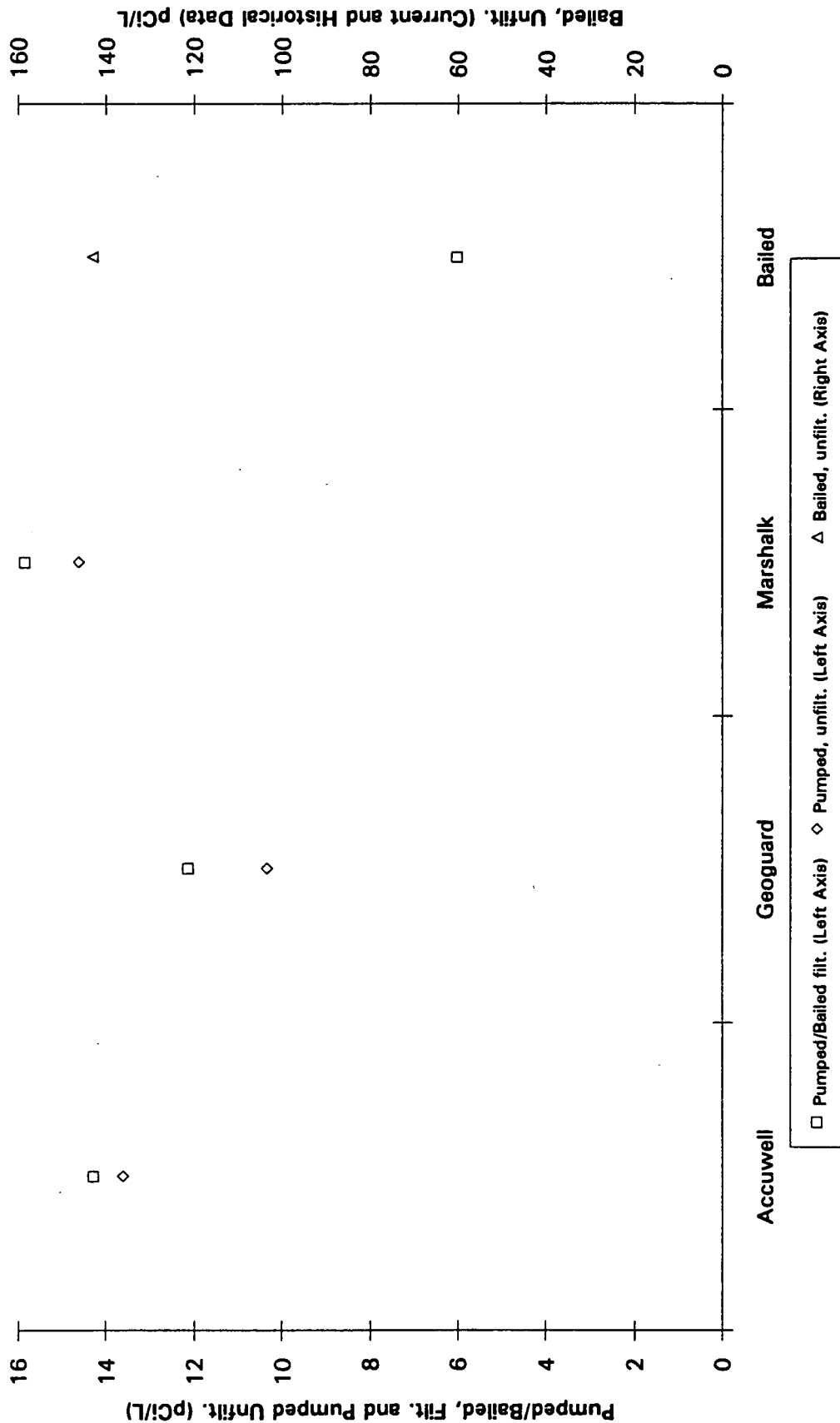


□ Pumped/Bailed filt. (Left Axis) ◇ Pumped, unfilt. (Left Axis) △ Bailed, unfilt. (Right Axis)

9/27/94

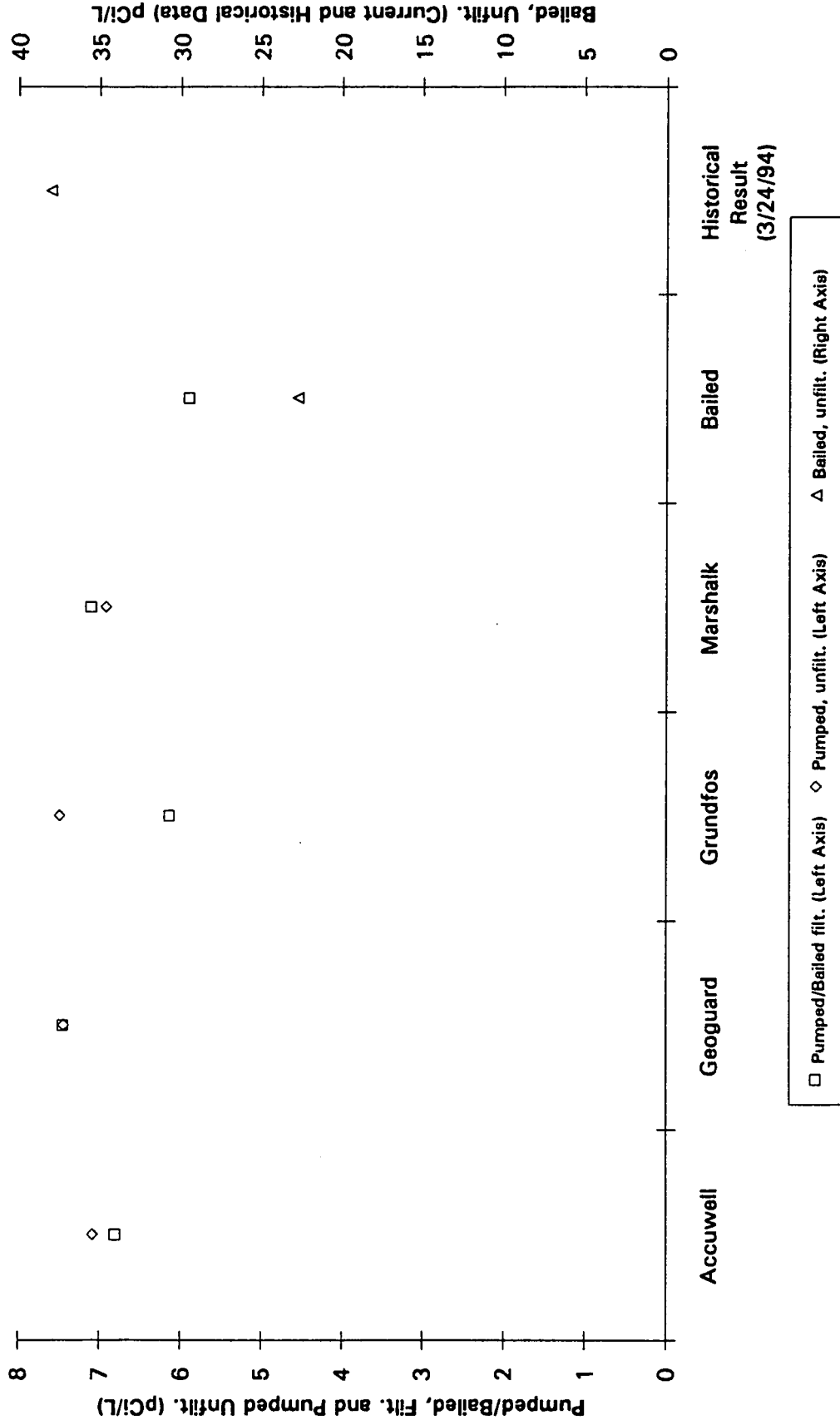
933-2715.7.710

Well 20591, Gross Beta

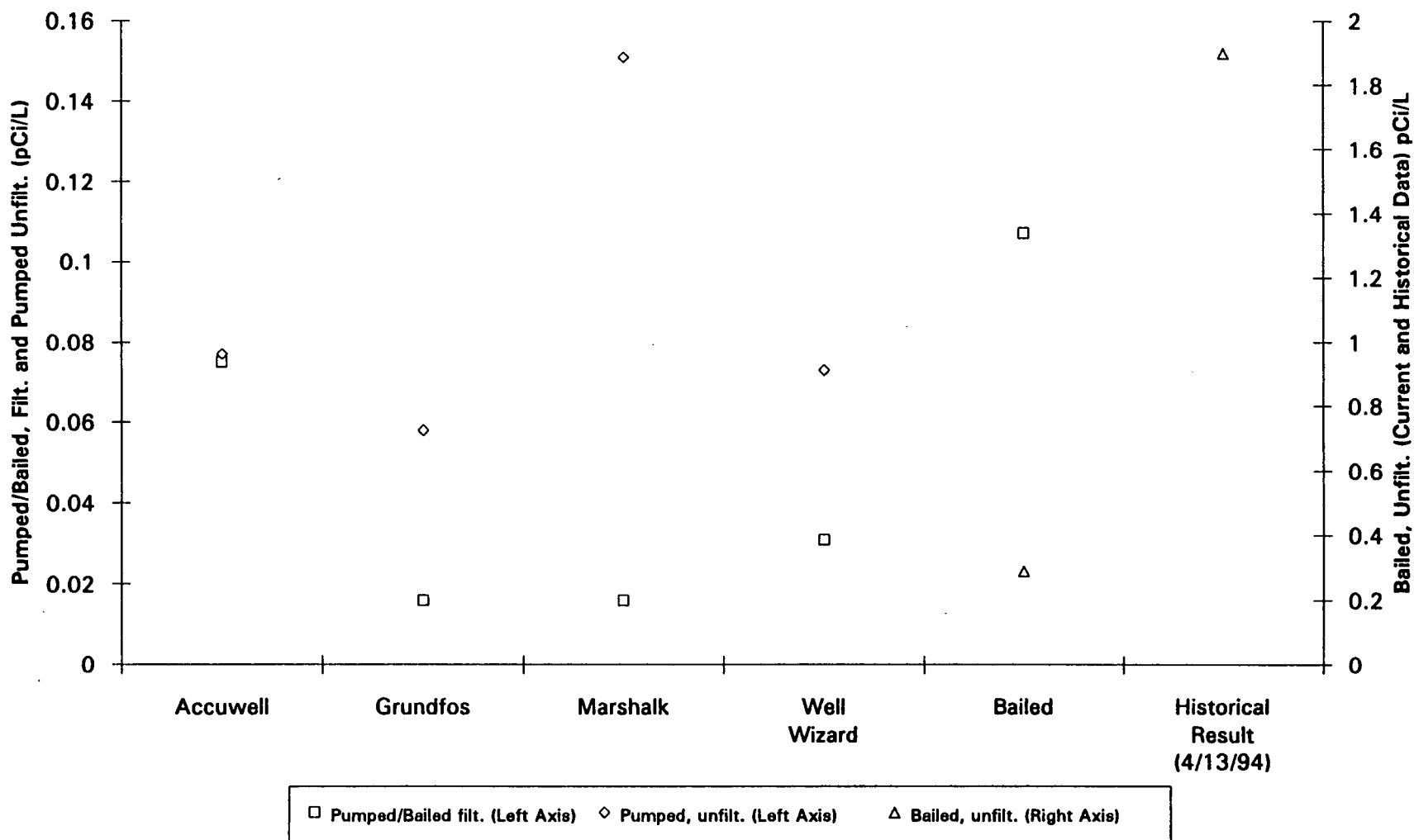


D 0046

Well 41691, Gross Beta



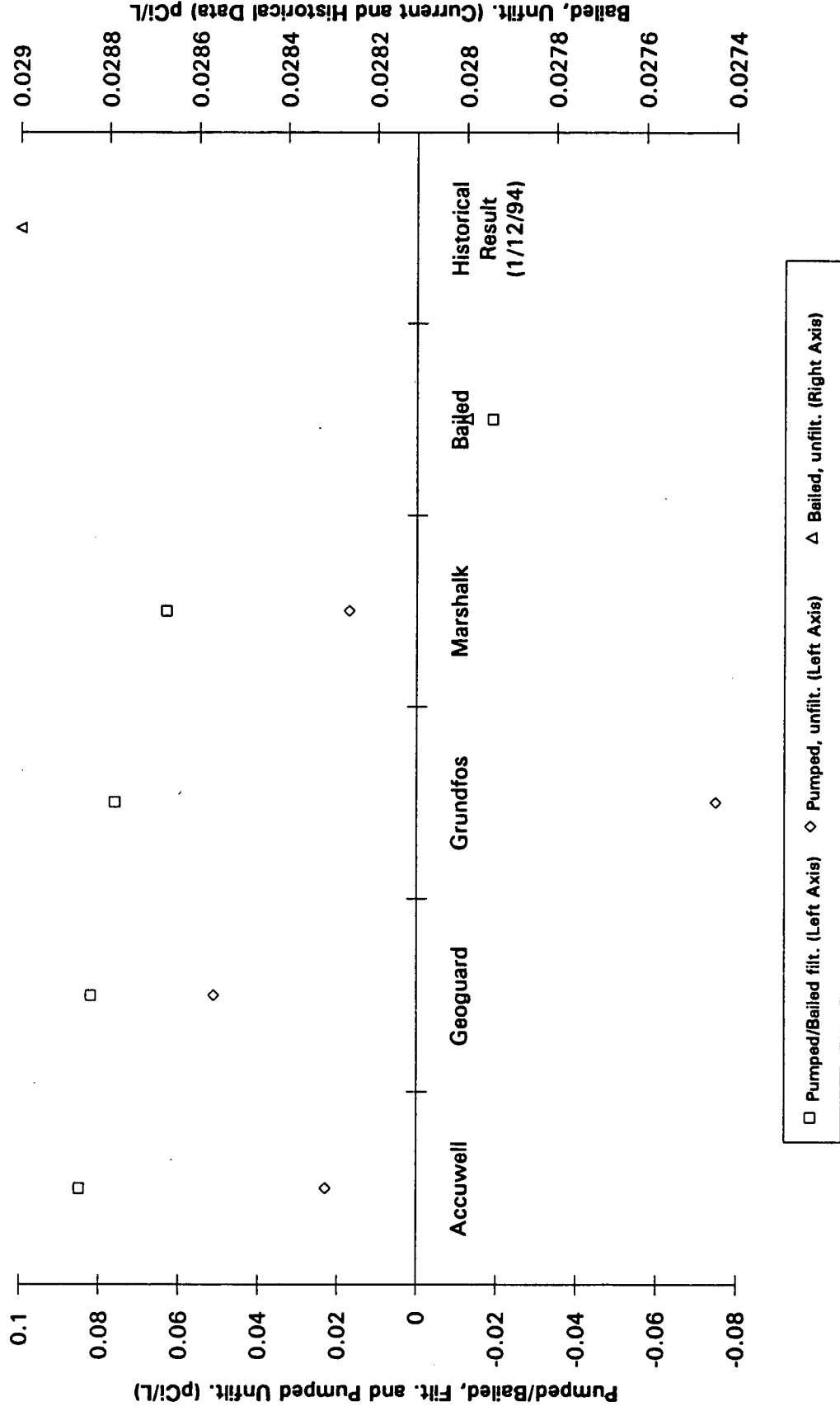
Well 1786, Strontium-89, 90



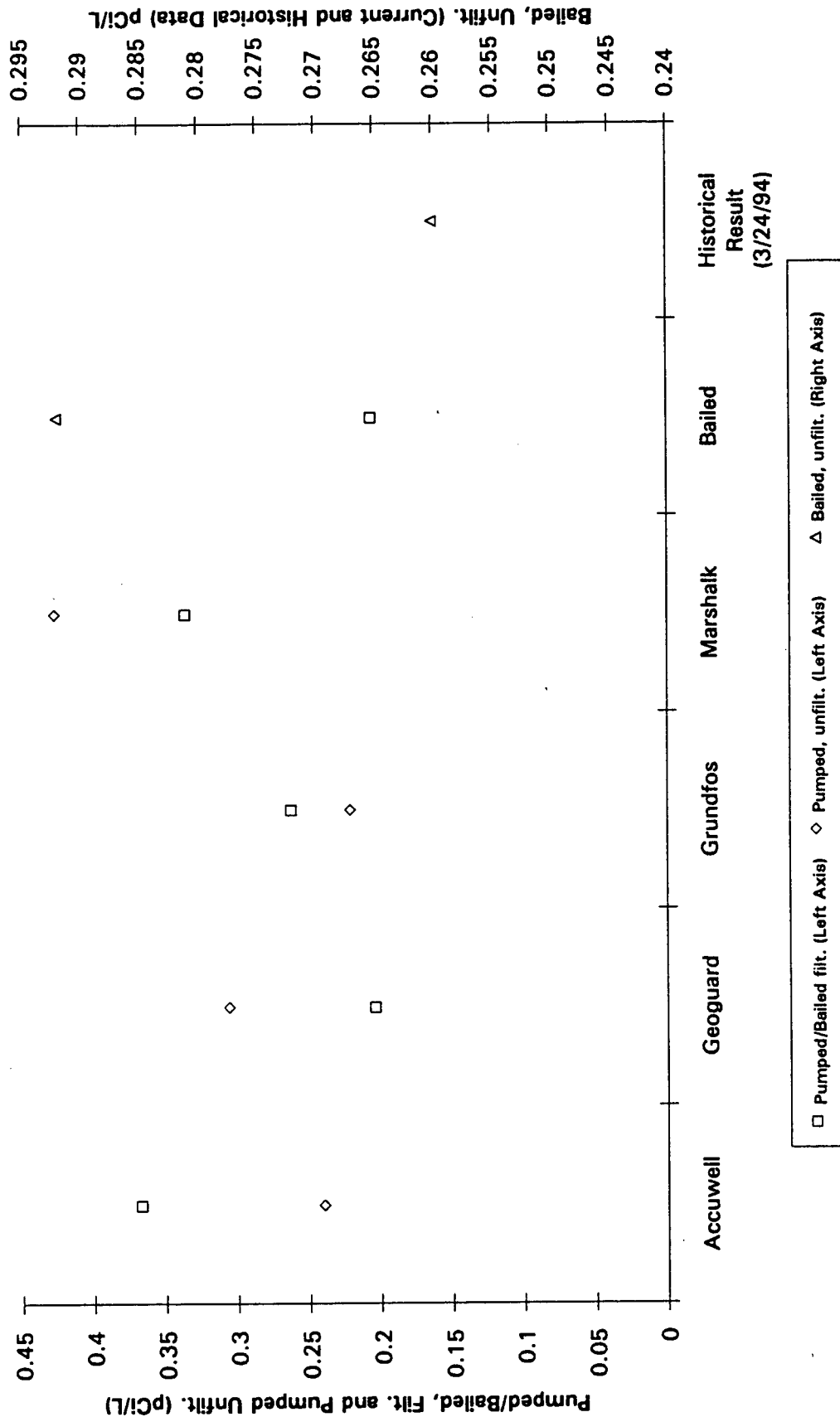
9/27/94

933-2715.7.710

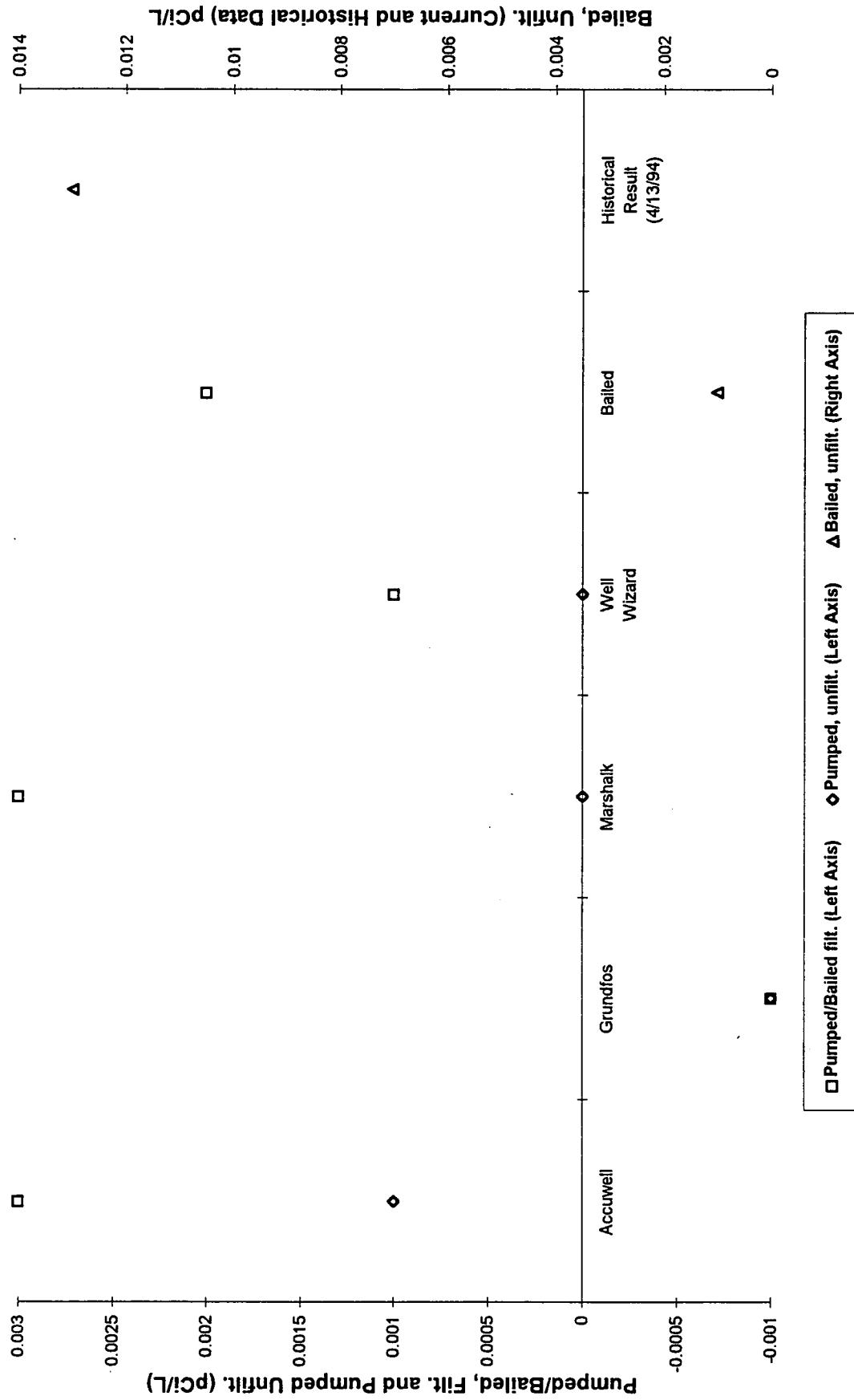
Well 2587, Strontium-89, 90



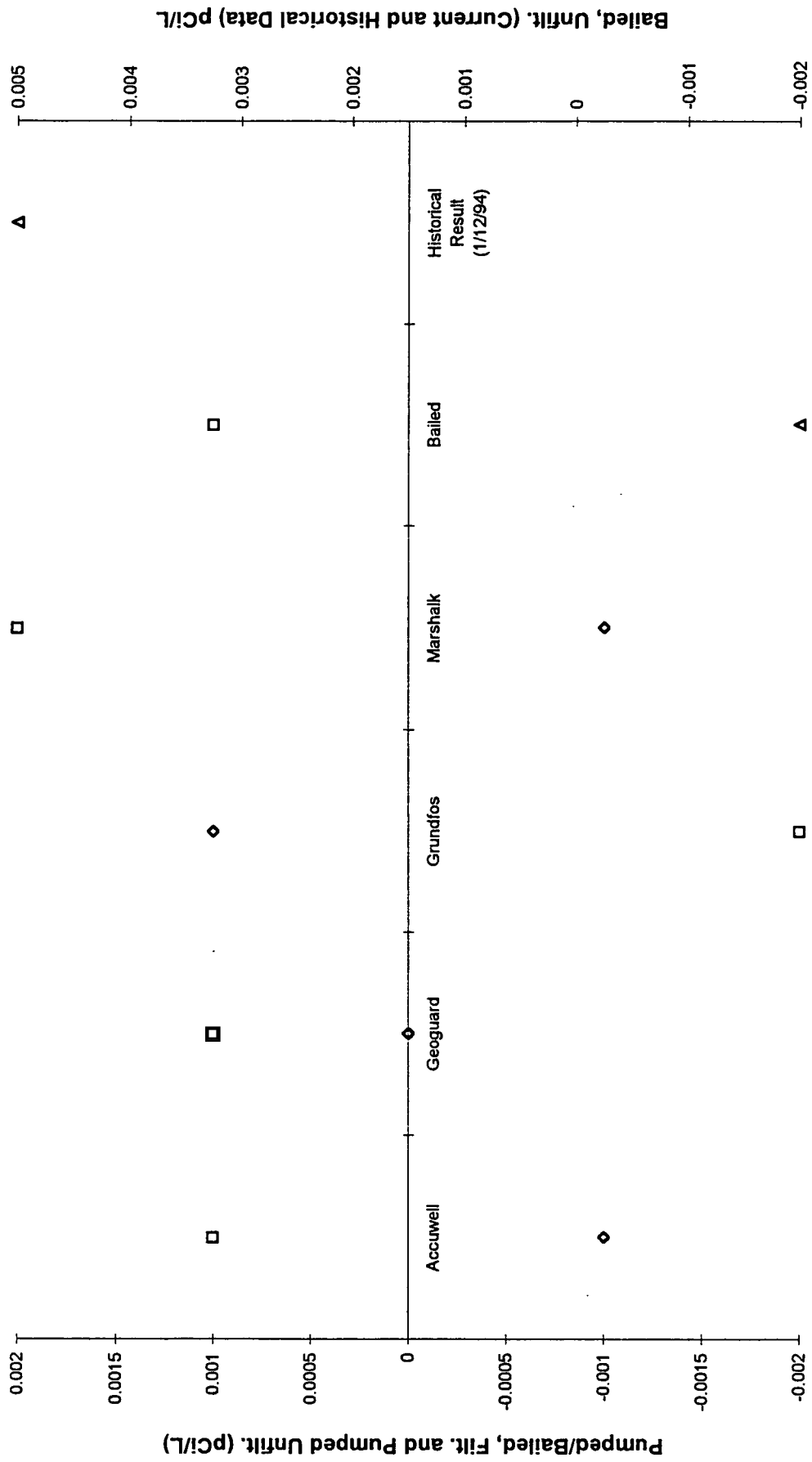
Well 41691, Strontium-89, 90



Well 1786, Plutonium-239, 240



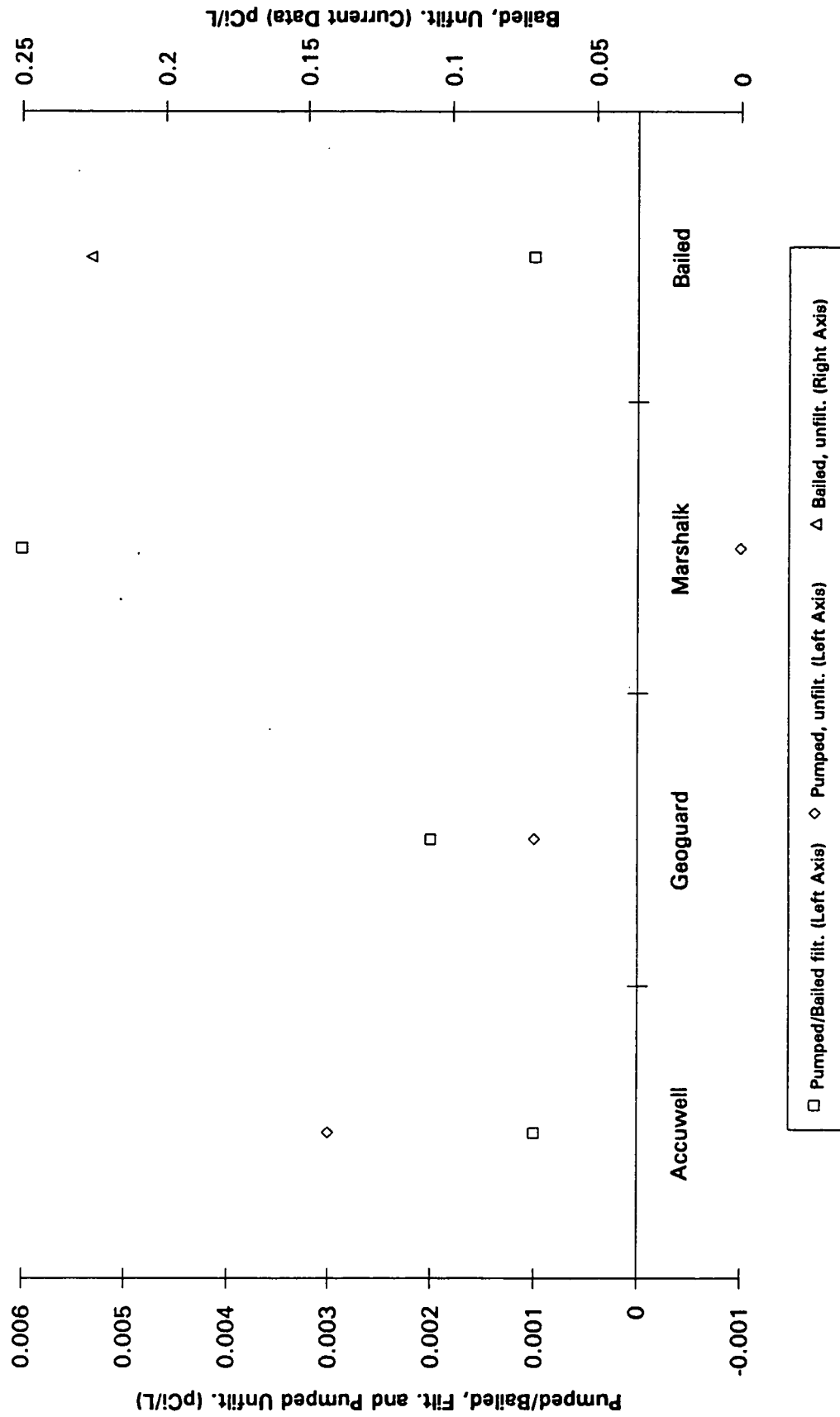
Well 2587, Plutonium-239,240



9/27/94

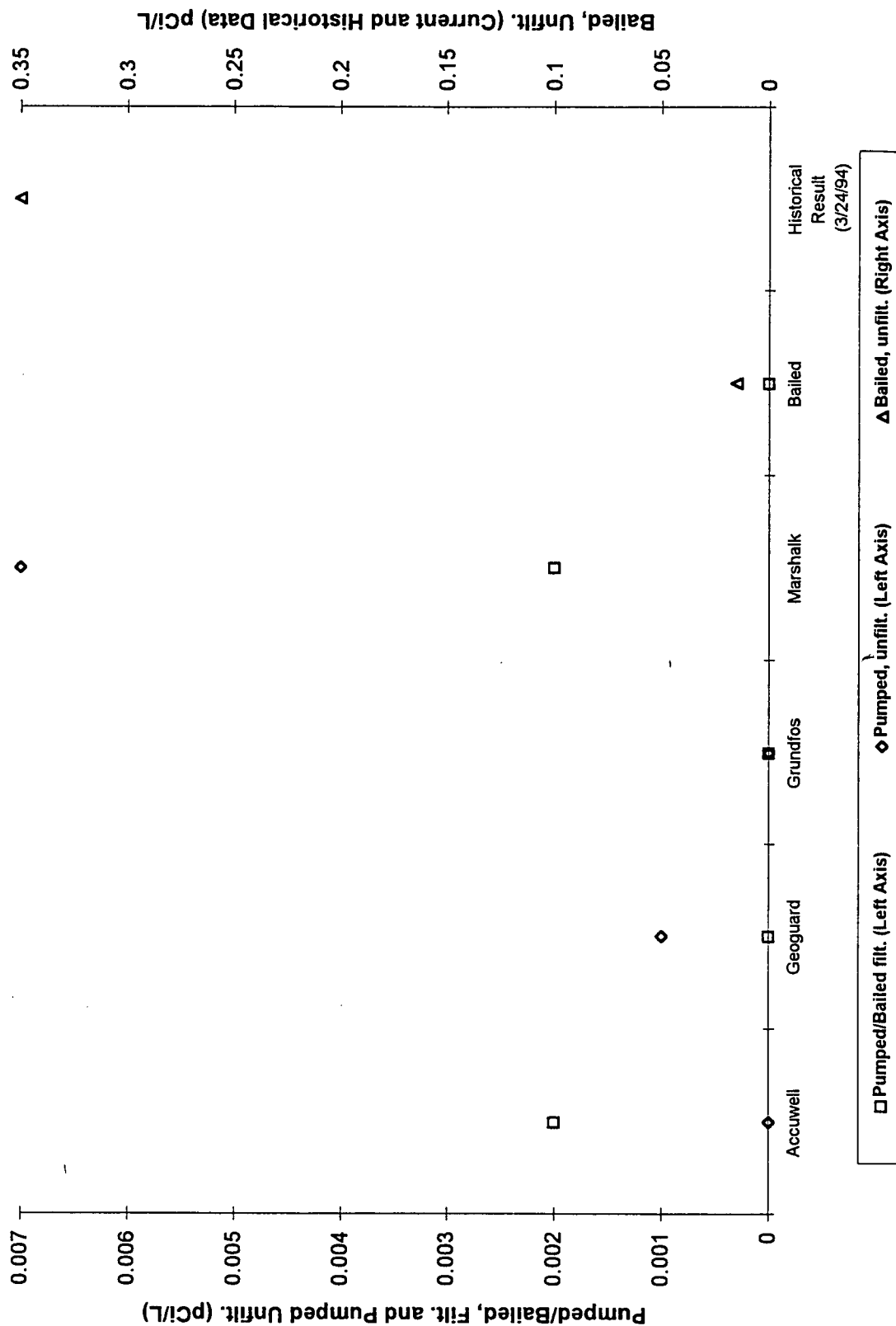
933-2715.7.710

Well 20591, Plutonium-239, 240

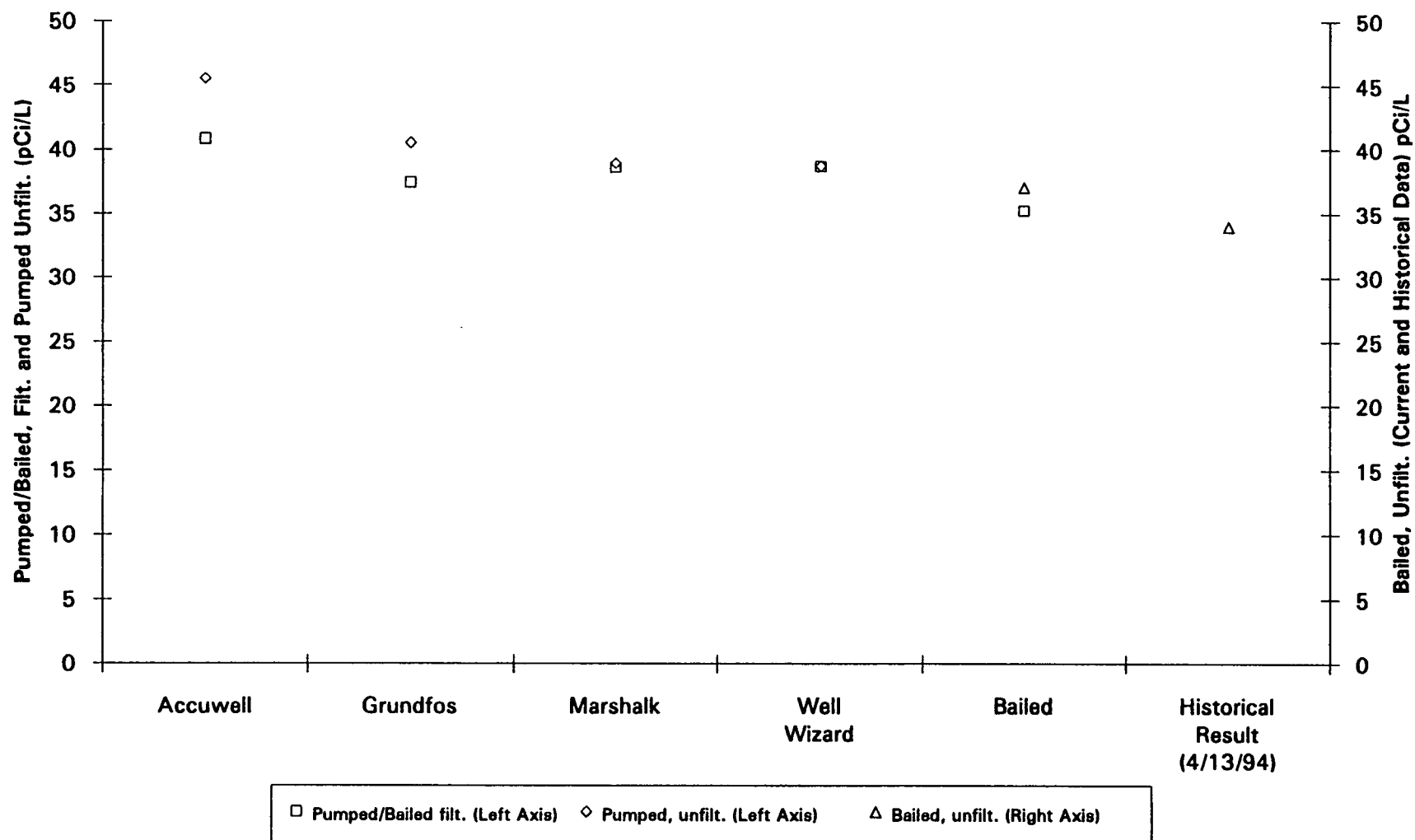


D 0053

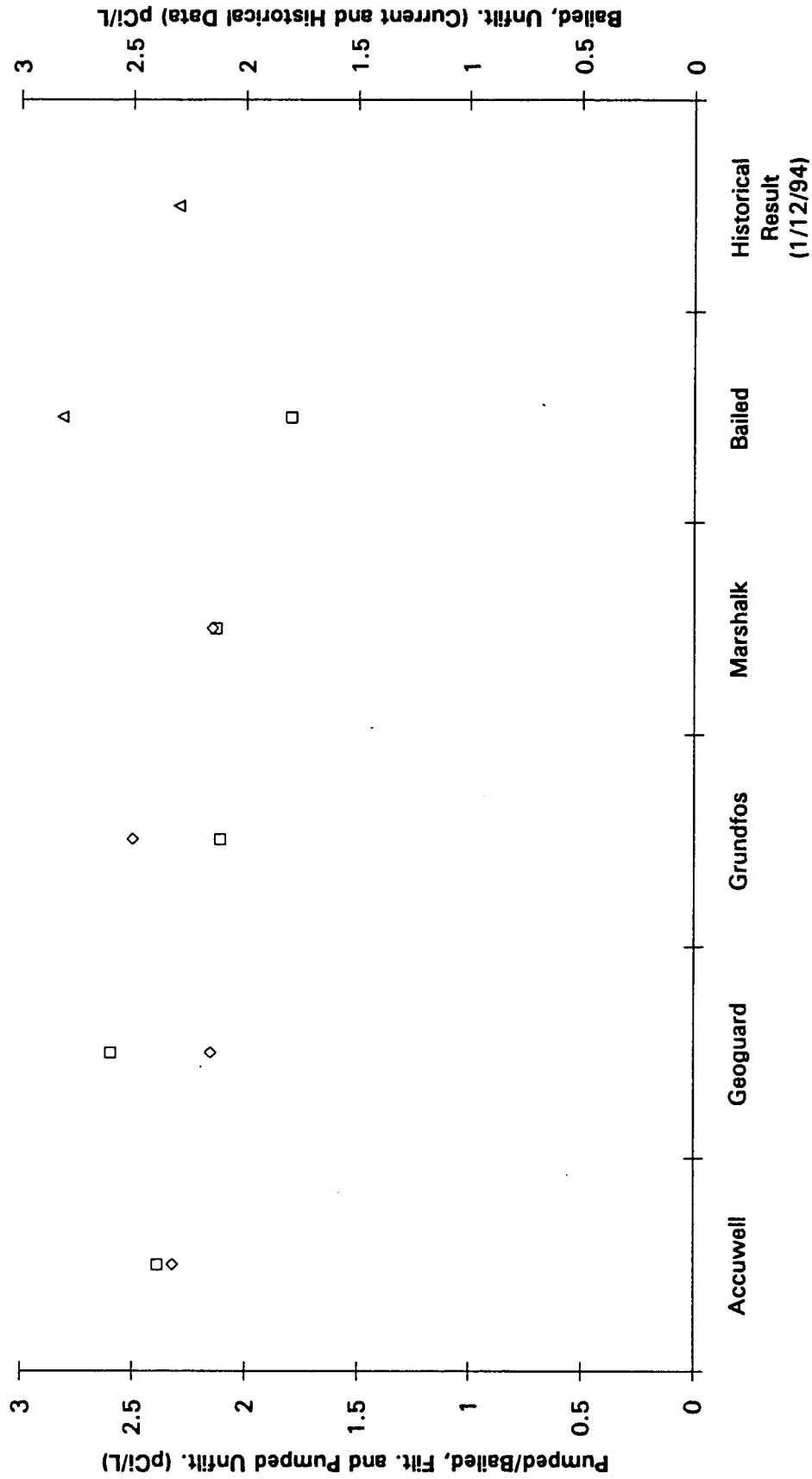
Well 41691, Plutonium-239, 240



Well 1786, Uranium-233,234



Well 2587, Uranium-233,234

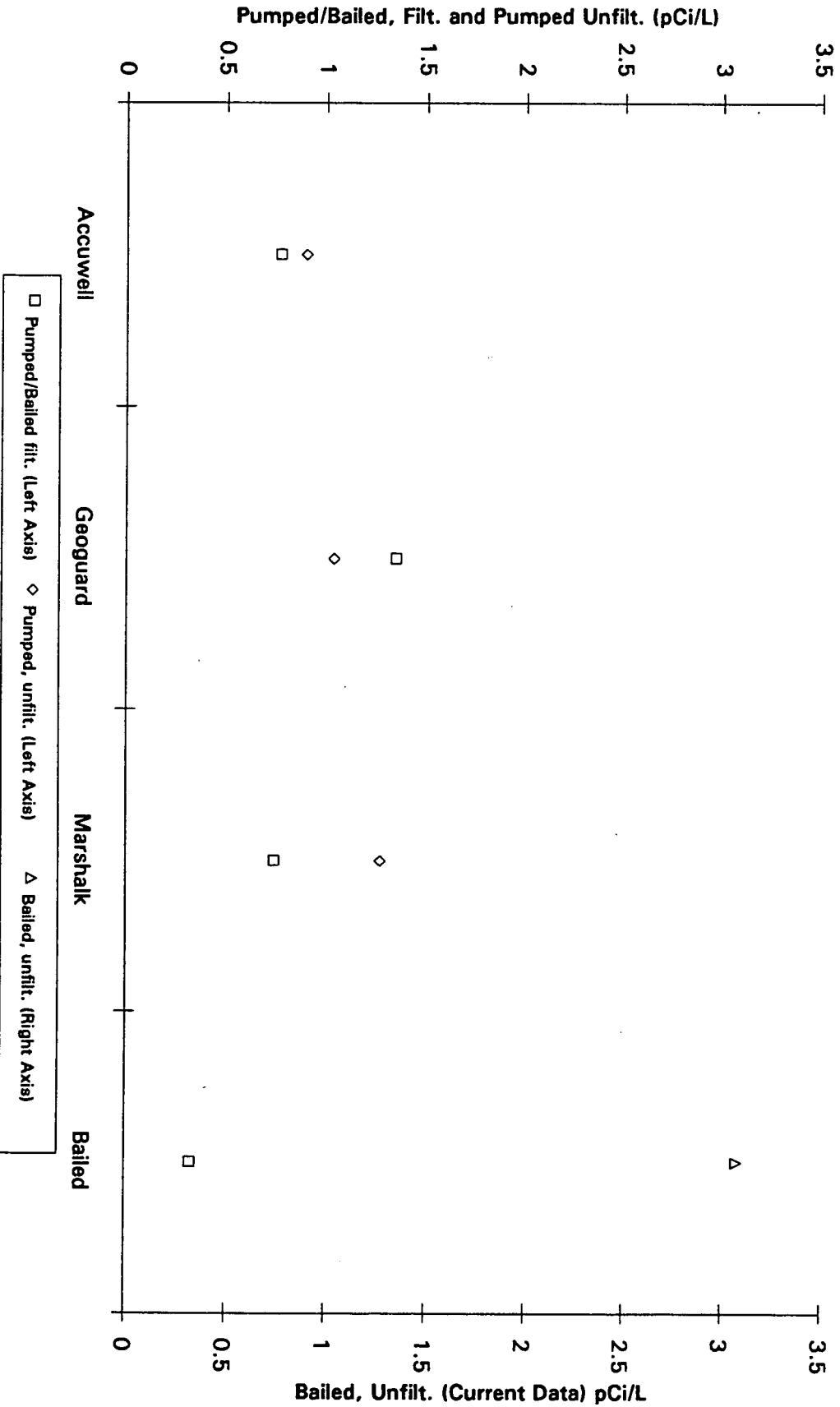


Pumped/Bailed filt. (Left Axis)

 Pumped, unfilt. (Left Axis)

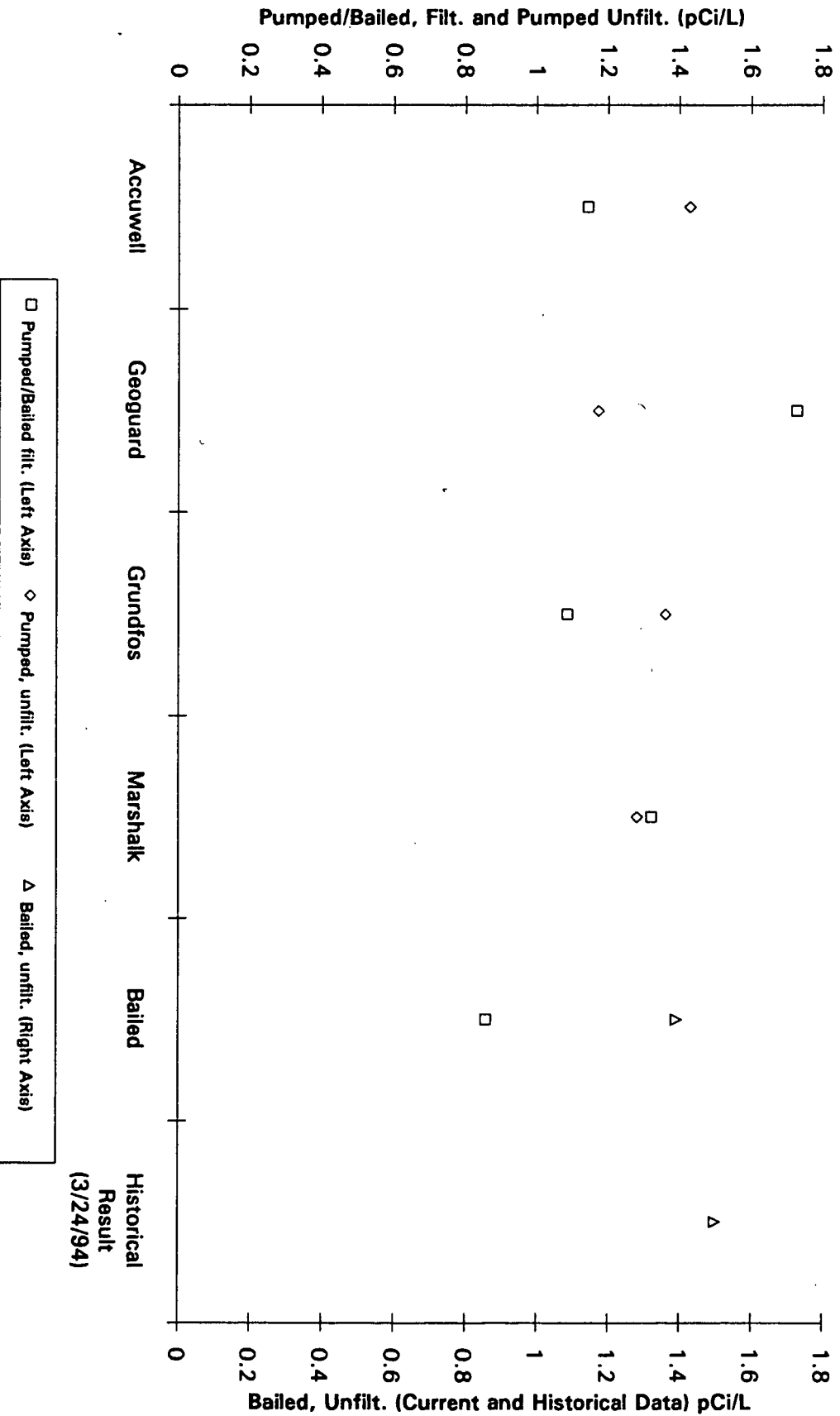
 Bailed, unfilt. (Right Axis)

Well 20591, Uranium-233,234



D 0057

Well 41691, Uranium-233,234



D 0058

RFEDS Number:	GW00931GA	GW00931GADUP	GW00933GA	GW00938GA	GW00940GA	GW00949GA		
Well Location:	1786	1786	1786	1786	1786	1786	Well:	1786
Sample Date:	7/1/94	7/1/94	7/5/94	7/7/94	7/8/94	7/11/94		
Pump Type:	Accuwell	Accuwell	Well Wizard	Grundfos	Marshalk	Bailed	Mean	td. Dev
1,1,1-Trichloroethane	0.3	0.3	0.2	0.2	0.2	0.2	0.22	0.04
1,1-Dichloroethane	0.7	0.7	0.5	0.5	0.4	0.5	0.52	0.11
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	- - -	- - -
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	- - -	- - -
Carbon Tetrachloride	0.2	0.2	0.2	0.2	0.1	0.2	0.18	0.04
Chloroform	0.4	0.4	0.4	0.3	0.3	0.3	0.34	0.05
Cis-1,2-Dichloroethene	0.3	0.3	0.2	0.2	0.2	0.2	0.22	0.04
Methylene Chloride	ND	ND	ND	ND	0.1	ND	- - -	- - -
Tetrachloroethene	ND	ND	ND	ND	ND	0.1	- - -	- - -
Trichloroethene	1	2	1	1	1	1	1.00	0.00
Total VOC's	2.9	3.9	2.5	2.4	2.3	2.5	2.52	0.23
		Laboratory						
		Duplicate						

RFEDS Number:	GW00941GA	GW00941GADL	GW00927GA	GW00935GA	GW00946GA	GW00948GA		
Well Location:	2587	2587	2587	2587	2587	2587	Well:	2587
Sample Date:	7/8/94	7/8/94	6/30/94	7/6/94	7/11/94	7/11/94		
Pump Type:	Accuwell	Accuwell	Grundfos	Marshalk	Geoguard	Bailed	Mean	td. Dev
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	- - -	- - -
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	- - -	- - -
1,1-Dichloroethene	0.2	ND	ND	ND	ND	ND	- - -	- - -
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	- - -	- - -
Carbon Tetrachloride	64	75	75	78	63	64	69	7
Chloroform	2	2	2	3	2	2	2	0
Cis-1,2-Dichloroethene	6	7	6	7	5	6	6	1
Methylene Chloride	ND	ND	ND	ND	ND	ND	- - -	- - -
Tetrachloroethene	150	230	250	260	210	230	220	44
Trichloroethene	38	43	42	43	34	40	39	4
Total VOC's	260.2	357	375	391	314	342	336	52
		Diluted						
	Sample Analysis							

RFEDS Number:	GW00944GA	GW00934GA	GW00934GADL	GW00942GA	GW00962GA		
Well Location:	20591	20591	20591	20591	20591	Well:	20591
Sample Date:	7/10/94	7/5/94	7/5/94	7/9/94	7/13/94		
Pump Type:	Geoguard	Accuwell	Accuwell	Marshalk	Bailed	Mean	td. Dev
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	- - -	- - -
1,1-Dichloroethane	ND	ND	ND	ND	ND	- - -	- - -
1,1-Dichloroethene	ND	ND	ND	ND	ND	- - -	- - -
1,2-Dichloroethane	ND	ND	ND	ND	ND	3	- - -
Carbon Tetrachloride	26	48	65	26	56	39	15
Chloroform	0.9	1	2	1	2	1.2	0.5
Cis-1,2-Dichloroethene	4	6	8	4	8	5.5	1.9
Methylene Chloride	ND	ND	ND	ND	ND	- - -	- - -
Tetrachloroethene	13	24	31	14	34	21	10
Trichloroethene	2	5	6	3	6	4.0	1.8
Total VOC's	46.4	84	112	48	109	72	30
			Diluted				
			Sample Analysis				

ND - Not Detected

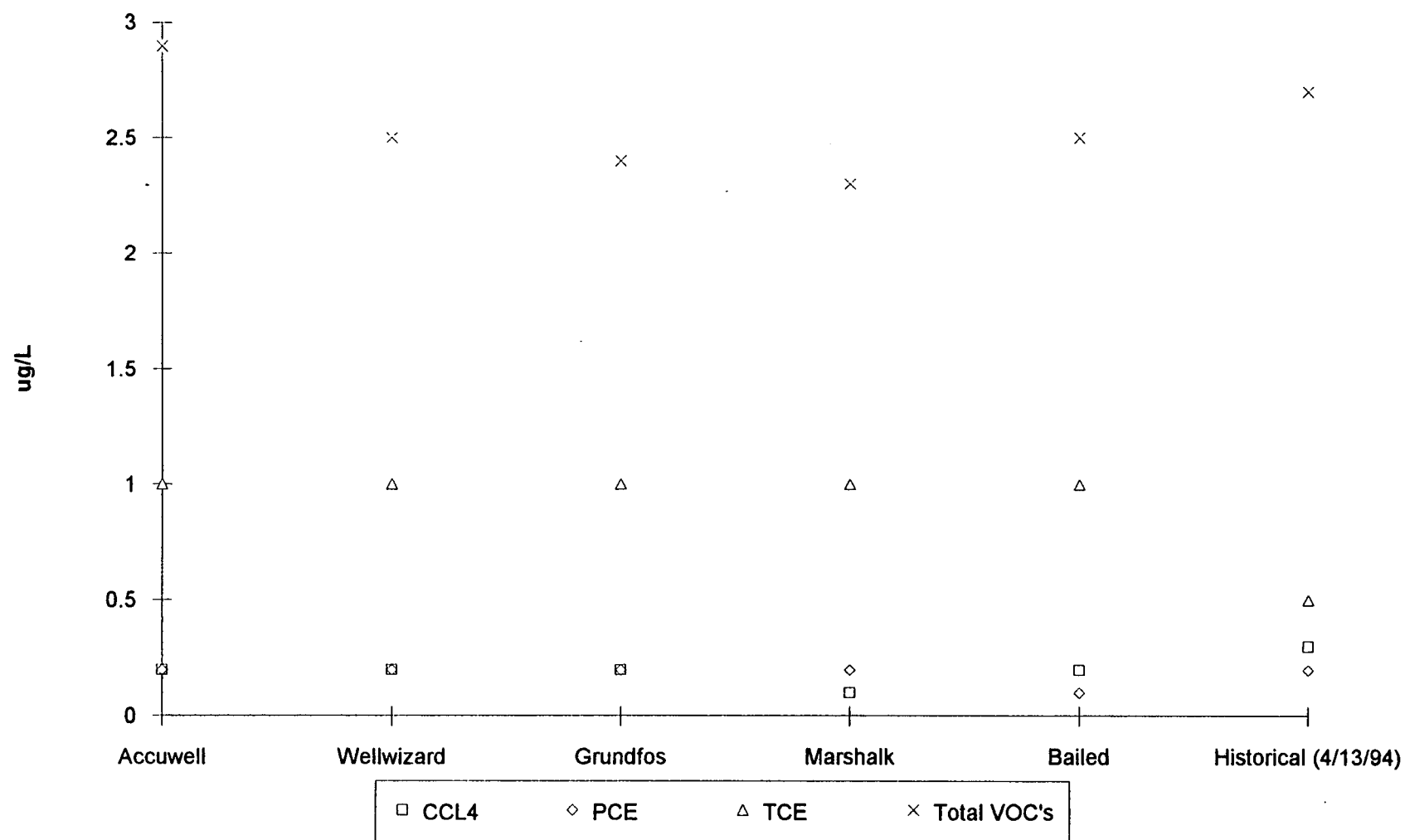
D 0061

RFEDS Number:	GW00943GA	GW00950GA		
Well Location:	41691	41691	ell: 4169	
Sample Date:	7/9/94	7/12/94		
Pump Type:	Geoguard	Bailed	Mean	Stdev
1,1,1-Trichloroethane	ND	ND	- - -	- - -
1,1-Dichloroethane	ND	ND	- - -	- - -
1,1-Dichloroethene	ND	ND	- - -	- - -
1,2-Dichloroethane	ND	ND	- - -	- - -
Carbon Tetrachloride	ND	ND	- - -	- - -
Chloroform	ND	ND	- - -	- - -
Cis-1,2-Dichloroethene	ND	ND	- - -	- - -
Methylene Chloride	ND	0.5	- - -	- - -
Tetrachloroethene	0.1	ND	- - -	- - -
Trichloroethene	ND	ND	- - -	- - -
Total VOC's	0.1	0.5	0.3	- - -

ND - Not Detected

D 0062

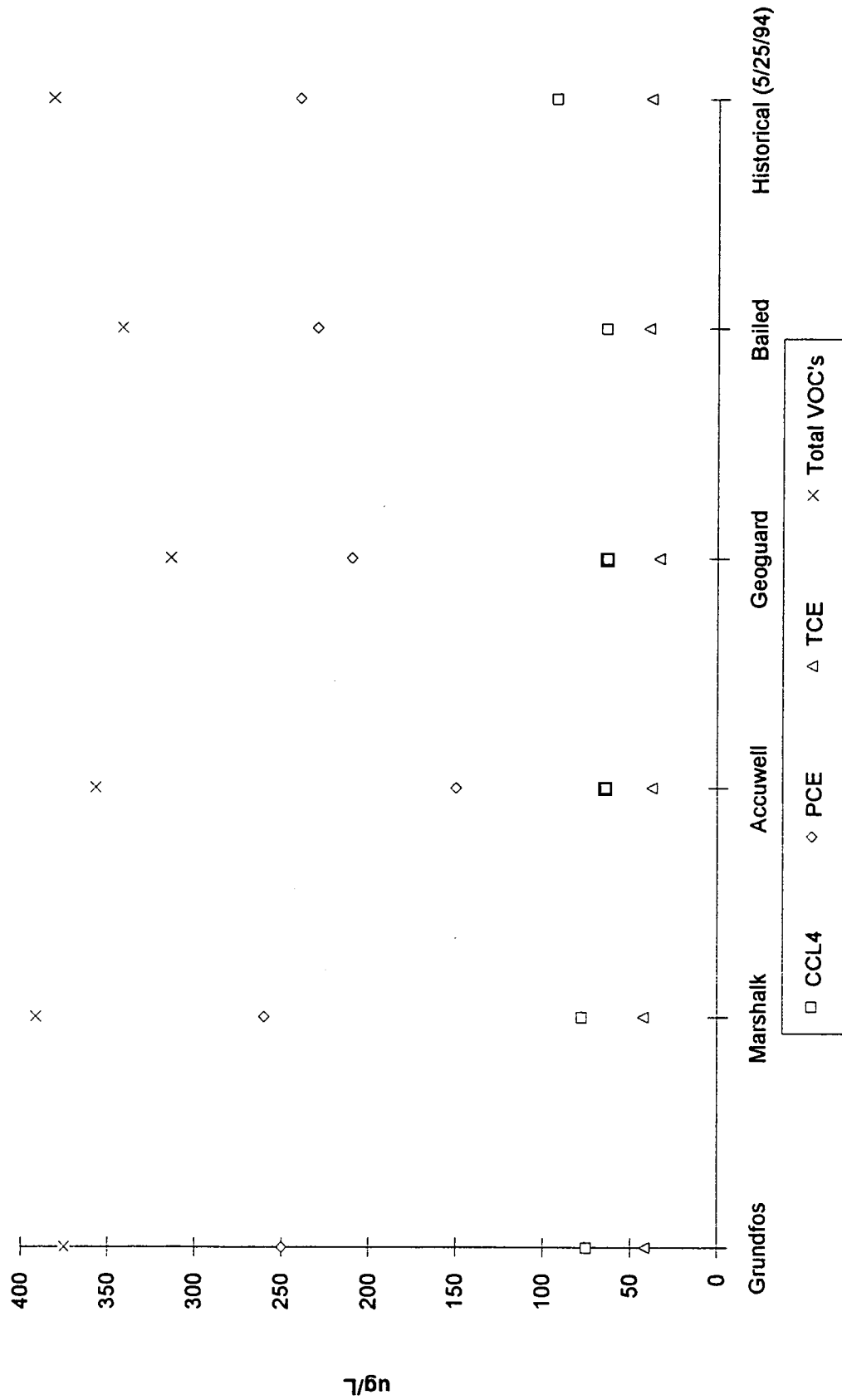
Well 1786, VOC's



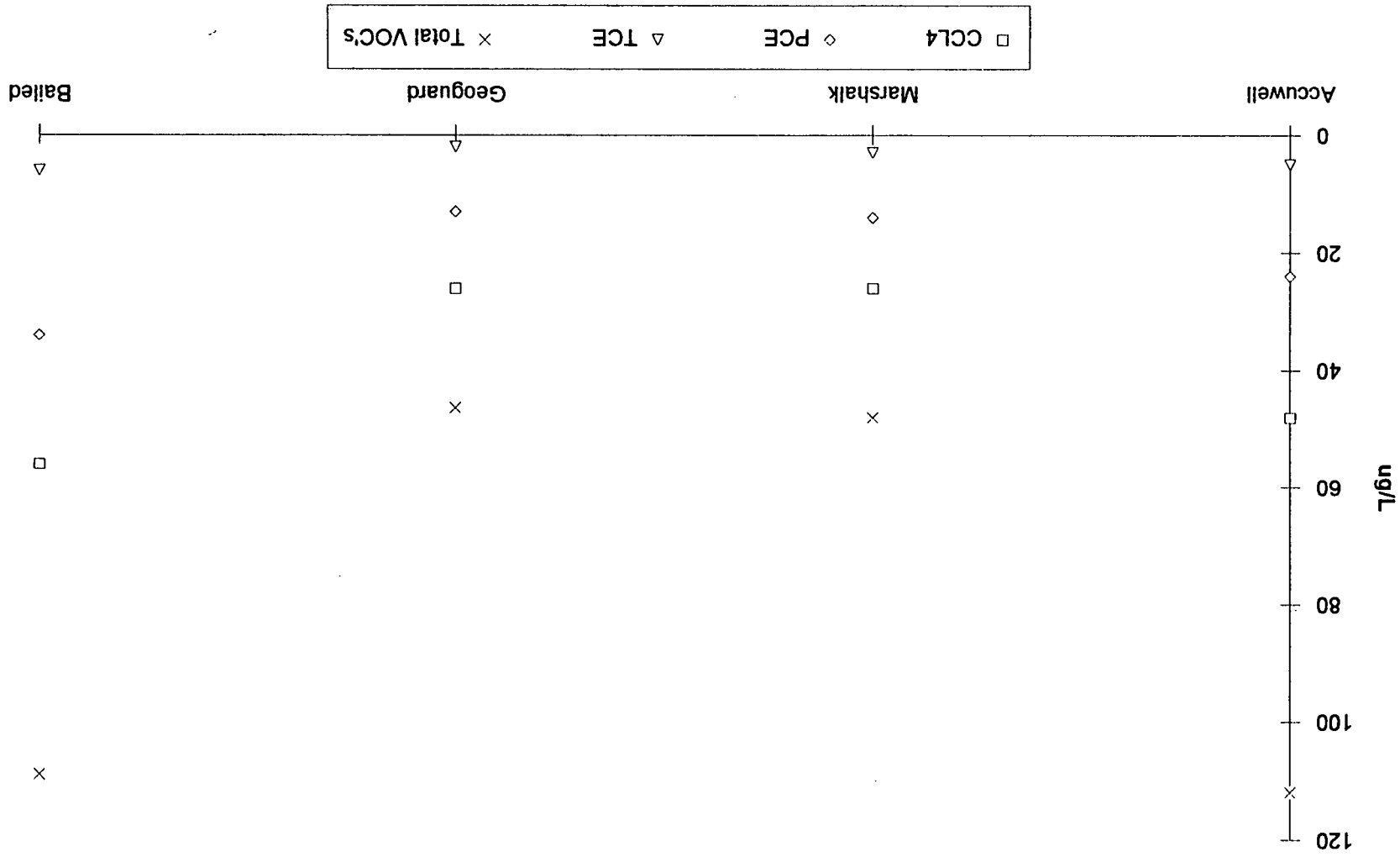
8/18/94

933-27/15.7.750

Well 2587, VOC's



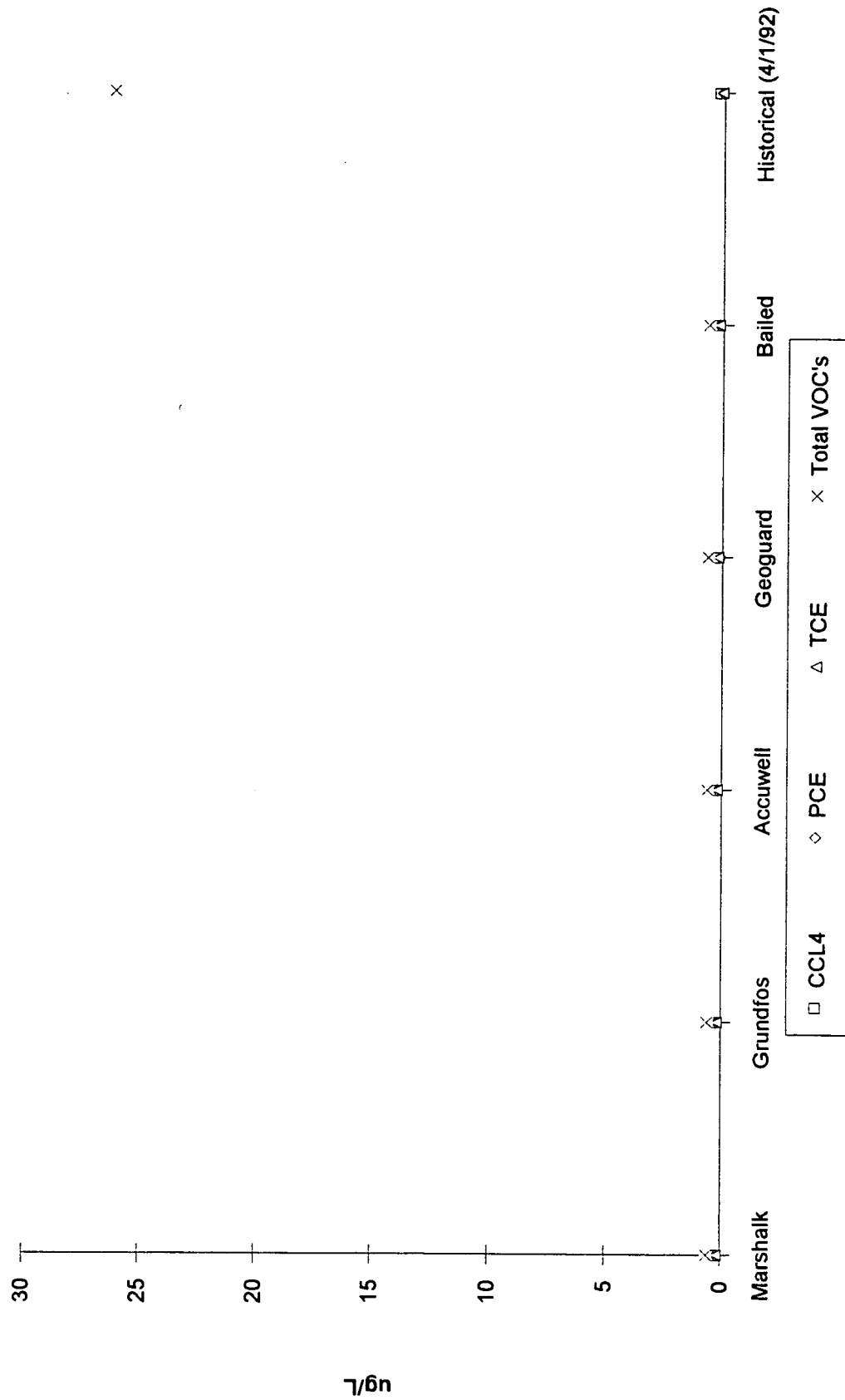
D 0065



8/18/94

933-2715.7.750

Well 41691, VOC's



D 0066

Field Evaluation Task

Metals Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Standard	Completion
1786	7/11/94	GW00949GA	Aluminum	UNFILTERED	83300.00		*	UG/L	5000.00	ALLUVIUM
20591	7/13/94	GW00962GA	Aluminum	UNFILTERED	43600.00		*	UG/L	5000.00	ALLUVIUM
2587	7/11/94	GW00948GA	Aluminum	UNFILTERED	15600.00		*	UG/L	5000.00	BEDROCK
41691	7/12/94	GW00950GA	Aluminum	UNFILTERED	11500.00		*	UG/L	5000.00	ALLUVIUM
1786	7/11/94	GW00949GA	Chromium	UNFILTERED	87.10			UG/L	50.00	ALLUVIUM
2587	7/11/94	GW00948GA	Chromium	UNFILTERED	102.00			UG/L	50.00	BEDROCK
20591	7/13/94	GW00962GA	Cobalt	UNFILTERED	52.20			UG/L	50.00	ALLUVIUM
1786	7/11/94	GW00949GA	Iron	UNFILTERED	84200.00			UG/L	300.00	ALLUVIUM
20591	7/13/94	GW00962GA	Iron	FILTERED	1290.00			UG/L	300.00	ALLUVIUM
20591	7/13/94	GW00962GA	Iron	UNFILTERED	71500.00			UG/L	300.00	ALLUVIUM
2587	7/11/94	GW00948GA	Iron	UNFILTERED	24900.00			UG/L	300.00	BEDROCK
41691	7/12/94	GW00950GA	Iron	UNFILTERED	16000.00			UG/L	300.00	ALLUVIUM
1786	7/11/94	GW00949GA	Lead	UNFILTERED	65.20		S	UG/L	50.00	ALLUVIUM

Field Evaluation Task

Metals Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Standard	Completion
20591	7/13/94	GW00962GA	Lead	UNFILTERED	65.20		S	UG/L	50.00	ALLUVIUM
1786	7/11/94	GW00949GA	Manganese	UNFILTERED	672.00			UG/L	50.00	ALLUVIUM
20591	7/05/94	GW00934GA	Manganese	FILTERED	83.60			UG/L	50.00	ALLUVIUM
20591	7/10/94	GW00944GA	Manganese	FILTERED	103.00			UG/L	50.00	ALLUVIUM
20591	7/13/94	GW00962GA	Manganese	FILTERED	1090.00			UG/L	50.00	ALLUVIUM
20591	7/05/94	GW00934GA	Manganese	UNFILTERED	67.90			UG/L	50.00	ALLUVIUM
20591	7/10/94	GW00944GA	Manganese	UNFILTERED	94.30			UG/L	50.00	ALLUVIUM
20591	7/13/94	GW00962GA	Manganese	UNFILTERED	1530.00			UG/L	50.00	ALLUVIUM
2587	7/11/94	GW00948GA	Manganese	UNFILTERED	345.00			UG/L	50.00	BEDROCK
41691	7/02/94	GW00929GA	Manganese	FILTERED	634.00			UG/L	50.00	ALLUVIUM
41691	7/03/94	GW00930GA	Manganese	FILTERED	643.00			UG/L	50.00	ALLUVIUM
41691	7/06/94	GW00936GA	Manganese	FILTERED	638.00			UG/L	50.00	ALLUVIUM
41691	7/09/94	GW00943GA	Manganese	FILTERED	623.00			UG/L	50.00	ALLUVIUM
41691	7/12/94	GW00950GA	Manganese	FILTERED	645.00			UG/L	50.00	ALLUVIUM
41691	7/02/94	GW00929GA	Manganese	UNFILTERED	615.00			UG/L	50.00	ALLUVIUM
41691	7/03/94	GW00930GA	Manganese	UNFILTERED	615.00			UG/L	50.00	ALLUVIUM
41691	7/06/94	GW00936GA	Manganese	UNFILTERED	621.00			UG/L	50.00	ALLUVIUM
41691	7/09/94	GW00943GA	Manganese	UNFILTERED	631.00			UG/L	50.00	ALLUVIUM
41691	7/12/94	GW00950GA	Manganese	UNFILTERED	762.00			UG/L	50.00	ALLUVIUM

Field Evaluation Task

Metals Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Standard	Completion
1786	7/01/94	GW00931GA	Selenium	FILTERED	200.00			UG/L	10.00	ALLUVIUM
1786	7/05/94	GW00933GA	Selenium	FILTERED	202.00			UG/L	10.00	ALLUVIUM
1786	7/07/94	GW00938GA	Selenium	FILTERED	202.00		*	UG/L	10.00	ALLUVIUM
1786	7/08/94	GW00940GA	Selenium	FILTERED	207.00		*	UG/L	10.00	ALLUVIUM
1786	7/11/94	GW00949GA	Selenium	FILTERED	220.00		*	UG/L	10.00	ALLUVIUM
1786	7/01/94	GW00931GA	Selenium	UNFILTERED	196.00			UG/L	10.00	ALLUVIUM
1786	7/05/94	GW00933GA	Selenium	UNFILTERED	225.00		S	UG/L	10.00	ALLUVIUM
1786	7/07/94	GW00938GA	Selenium	UNFILTERED	182.00		N	UG/L	10.00	ALLUVIUM
1786	7/08/94	GW00940GA	Selenium	UNFILTERED	188.00		N	UG/L	10.00	ALLUVIUM
1786	7/11/94	GW00949GA	Selenium	UNFILTERED	188.00		N	UG/L	10.00	ALLUVIUM
1786	7/11/94	GW00949GA	Vanadium	UNFILTERED	193.00			UG/L	100.00	ALLUVIUM

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample		Type	Result	Error	Result	Lab	Units	Standard	Completion
		Number	Constituent				Qualifier	Qualifier			
1786	7/01/94	GW00931GA	Gross Alpha	FILTERED	45.9500	10.46400			PCI/L	7.00	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Alpha	FILTERED	44.9800	10.76000			PCI/L	7.00	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Alpha	FILTERED	39.9200	9.84500			PCI/L	7.00	ALLUVIUM
1786	7/08/94	GW00940GA	Gross Alpha	FILTERED	11.6300	2.07200			PCI/L	7.00	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Alpha	FILTERED	32.4700	6.28000			PCI/L	7.00	ALLUVIUM
1786	7/01/94	GW00931GA	Gross Alpha	UNFILTERED	55.5500	12.31900			PCI/L	7.00	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Alpha	UNFILTERED	41.8000	8.83600			PCI/L	7.00	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Alpha	UNFILTERED	41.7900	10.70700			PCI/L	7.00	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Alpha	UNFILTERED	362.1000	62.54400			PCI/L	7.00	ALLUVIUM
20591	7/13/94	GW00962GA	Gross Alpha	UNFILTERED	142.5000	17.66400			PCI/L	7.00	ALLUVIUM
2587	7/12/94	GW00948GA	Gross Alpha	UNFILTERED	60.3200	9.47100			PCI/L	7.00	BEDROCK
41691	7/12/94	GW00950GA	Gross Alpha	UNFILTERED	18.2800	4.50600			PCI/L	7.00	ALLUVIUM
1786	7/01/94	GW00931GA	Gross Beta	FILTERED	23.2700	5.24700			PCI/L	5.00	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Beta	FILTERED	22.4700	5.13900			PCI/L	5.00	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Beta	FILTERED	16.2400	4.98200			PCI/L	5.00	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Beta	FILTERED	12.2100	2.61300			PCI/L	5.00	ALLUVIUM
1786	7/01/94	GW00931GA	Gross Beta	UNFILTERED	18.6400	4.86900			PCI/L	5.00	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Beta	UNFILTERED	12.8100	3.72800			PCI/L	5.00	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Beta	UNFILTERED	20.3300	4.87800			PCI/L	5.00	ALLUVIUM
1786	7/08/94	GW00940GA	Gross Beta	UNFILTERED	9.8360	1.19400			PCI/L	5.00	ALLUVIUM

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample		Type	Result	Error	Result Qualifier	Lab Qualifier	Units	Standard	Completion
		Number	Constituent								
1786	7/12/94	GW00949GA	Gross Beta	UNFILTERED	255.3000	35.04500			PCI/L	5.00	ALLUVIUM
20591	7/05/94	GW00934GA	Gross Beta	FILTERED	14.2800	1.41500			PCI/L	5.00	ALLUVIUM
20591	7/10/94	GW00944GA	Gross Beta	FILTERED	12.1300	1.25000			PCI/L	5.00	ALLUVIUM
20591	7/13/94	GW00962GA	Gross Beta	FILTERED	6.0300	1.04800			PCI/L	5.00	ALLUVIUM
20591	7/05/94	GW00934GA	Gross Beta	UNFILTERED	13.6100	1.24500			PCI/L	5.00	ALLUVIUM
20591	7/10/94	GW00944GA	Gross Beta	UNFILTERED	10.3500	1.15400			PCI/L	5.00	ALLUVIUM
20591	7/13/94	GW00962GA	Gross Beta	UNFILTERED	143.1000	9.24900			PCI/L	5.00	ALLUVIUM
2587	7/12/94	GW00948GA	Gross Beta	UNFILTERED	35.7100	6.05600			PCI/L	5.00	BEDROCK
41691	7/02/94	GW00929GA	Gross Beta	FILTERED	7.1040	1.23200			PCI/L	5.00	ALLUVIUM
41691	7/03/94	GW00930GA	Gross Beta	FILTERED	6.1380	1.16900			PCI/L	5.00	ALLUVIUM
41691	7/06/94	GW00936GA	Gross Beta	FILTERED	6.8020	1.08200			PCI/L	5.00	ALLUVIUM
41691	7/09/94	GW00943GA	Gross Beta	FILTERED	7.4490	1.22800			PCI/L	5.00	ALLUVIUM
41691	7/12/94	GW00950GA	Gross Beta	FILTERED	5.8930	1.04900			PCI/L	5.00	ALLUVIUM
41691	7/02/94	GW00929GA	Gross Beta	UNFILTERED	6.9190	1.05000			PCI/L	5.00	ALLUVIUM
41691	7/03/94	GW00930GA	Gross Beta	UNFILTERED	7.4960	1.10700			PCI/L	5.00	ALLUVIUM
41691	7/06/94	GW00936GA	Gross Beta	UNFILTERED	7.0780	1.05200			PCI/L	5.00	ALLUVIUM
41691	7/09/94	GW00943GA	Gross Beta	UNFILTERED	7.4440	1.10300			PCI/L	5.00	ALLUVIUM
41691	7/12/94	GW00950GA	Gross Beta	UNFILTERED	22.7300	3.31200			PCI/L	5.00	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-233,234	FILTERED	40.8200	2.59500			PCI/L	5.00	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-233,234	FILTERED	38.7100	2.37000			PCI/L	5.00	ALLUVIUM

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Error	Result Qualifier	Lab Qualifier	Units	Standard	Completion
1786	7/07/94	GW00938GA	Uranium-233,234	FILTERED	37.4100	2.26000			PCI/L	5.00	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-233,234	FILTERED	38.6100	2.08000			PCI/L	5.00	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-233,234	FILTERED	35.2200	4.20200			PCI/L	5.00	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-233,234	UNFILTERED	45.5600	3.22600			PCI/L	5.00	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-233,234	UNFILTERED	38.7700	2.34600			PCI/L	5.00	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-233,234	UNFILTERED	40.5300	1.64900			PCI/L	5.00	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-233,234	UNFILTERED	38.9800	2.94000			PCI/L	5.00	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-233,234	UNFILTERED	37.0600	2.02700			PCI/L	5.00	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-238	FILTERED	30.7100	2.00900			PCI/L	5.00	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-238	FILTERED	28.2300	1.78800			PCI/L	5.00	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-238	FILTERED	29.1400	1.81300			PCI/L	5.00	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-238	FILTERED	28.4700	1.58400			PCI/L	5.00	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-238	FILTERED	26.3400	3.25400			PCI/L	5.00	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-238	UNFILTERED	32.1100	2.35200			PCI/L	5.00	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-238	UNFILTERED	28.9100	1.80100			PCI/L	5.00	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-238	UNFILTERED	29.2300	1.23100			PCI/L	5.00	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-238	UNFILTERED	27.8100	2.18000			PCI/L	5.00	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-238	UNFILTERED	27.7500	1.56800			PCI/L	5.00	ALLUVIUM

Field Evaluation Task

Volatile Organic Constituents Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Result	Result Qualifier	Lab Qualifier	Units	Standard	Completion
2587	7/08/94	GW00941GA	1,1-Dichloroethene	.20			UG/L	.06	BEDROCK
20591	7/13/94	GW00962GA	1,2-Dichloroethane	3.00			UG/L	.40	ALLUVIUM
20591	7/05/94	GW00934GA	Carbon Tetrachloride	48.00	E		UG/L	.25	ALLUVIUM
20591	7/05/94	GW00934GADL	Carbon Tetrachloride	65.00	D		UG/L	.25	ALLUVIUM
20591	7/09/94	GW00942GA	Carbon Tetrachloride	26.00			UG/L	.25	ALLUVIUM
20591	7/10/94	GW00944GA	Carbon Tetrachloride	26.00			UG/L	.25	ALLUVIUM
20591	7/13/94	GW00962GA	Carbon Tetrachloride	56.00			UG/L	.25	ALLUVIUM
2587	6/30/94	GW00927GA	Carbon Tetrachloride	75.00			UG/L	.25	BEDROCK
2587	7/06/94	GW00935GA	Carbon Tetrachloride	78.00			UG/L	.25	BEDROCK
2587	7/08/94	GW00941GA	Carbon Tetrachloride	64.00	E		UG/L	.25	BEDROCK
2587	7/08/94	GW00941GADL	Carbon Tetrachloride	75.00	D		UG/L	.25	BEDROCK
2587	7/11/94	GW00946GA	Carbon Tetrachloride	63.00			UG/L	.25	BEDROCK
2587	7/11/94	GW00948GA	Carbon Tetrachloride	64.00			UG/L	.25	BEDROCK
1786	7/05/94	GW00931GA	Chloroform	.40			UG/L	.19	ALLUVIUM
1786	7/05/94	GW00933GA	Chloroform	.40			UG/L	.19	ALLUVIUM
1786	7/05/94	GW00931GADUP	Chloroform	.40			UG/L	.19	ALLUVIUM
1786	7/07/94	GW00938GA	Chloroform	.30			UG/L	.19	ALLUVIUM
1786	7/08/94	GW00940GA	Chloroform	.30			UG/L	.19	ALLUVIUM
1786	7/11/94	GW00949GA	Chloroform	.30			UG/L	.19	ALLUVIUM
20591	7/05/94	GW00934GA	Chloroform	1.00			UG/L	.19	ALLUVIUM
20591	7/05/94	GW00934GADL	Chloroform	2.00	D		UG/L	.19	ALLUVIUM

Field Evaluation Task

Volatile Organic Constituents Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Result	Result Qualifier	Lab Qualifier	Units	Standard	Completion
20591	7/09/94	GW00942GA	Chloroform	1.00			UG/L	.19	ALLUVIUM
20591	7/10/94	GW00944GA	Chloroform	.90			UG/L	.19	ALLUVIUM
20591	7/13/94	GW00962GA	Chloroform	2.00			UG/L	.19	ALLUVIUM
2587	6/30/94	GW00927GA	Chloroform	2.00			UG/L	.19	BEDROCK
2587	7/06/94	GW00935GA	Chloroform	3.00			UG/L	.19	BEDROCK
2587	7/08/94	GW00941GADL	Chloroform	2.00	D		UG/L	.19	BEDROCK
2587	7/08/94	GW00941GA	Chloroform	2.00			UG/L	.19	BEDROCK
2587	7/11/94	GW00948GA	Chloroform	2.00			UG/L	.19	BEDROCK
2587	7/11/94	GW00946GA	Chloroform	2.00			UG/L	.19	BEDROCK
20591	7/05/94	GW00934GA	Tetrachloroethene	24.00			UG/L	.80	ALLUVIUM
20591	7/05/94	GW00934GADL	Tetrachloroethene	31.00	D		UG/L	.80	ALLUVIUM
20591	7/09/94	GW00942GA	Tetrachloroethene	14.00			UG/L	.80	ALLUVIUM
20591	7/10/94	GW00944GA	Tetrachloroethene	13.00			UG/L	.80	ALLUVIUM
20591	7/13/94	GW00962GA	Tetrachloroethene	34.00			UG/L	.80	ALLUVIUM
2587	6/30/94	GW00927GA	Tetrachloroethene	250.00			UG/L	.80	BEDROCK
2587	7/06/94	GW00935GA	Tetrachloroethene	260.00			UG/L	.80	BEDROCK
2587	7/08/94	GW00941GA	Tetrachloroethene	150.00	E		UG/L	.80	BEDROCK
2587	7/08/94	GW00941GADL	Tetrachloroethene	230.00	D		UG/L	.80	BEDROCK
2587	7/11/94	GW00946GA	Tetrachloroethene	210.00			UG/L	.80	BEDROCK
2587	7/11/94	GW00948GA	Tetrachloroethene	230.00			UG/L	.80	BEDROCK
20591	7/05/94	GW00934GA	Trichloroethene	5.00			UG/L	2.70	ALLUVIUM
20591	7/05/94	GW00934GADL	Trichloroethene	6.00	D		UG/L	2.70	ALLUVIUM

Field Evaluation Task

Volatile Organic Constituents Exceeding Rocky Flats Groundwater Quality Standards

Well	Sample Date	RFEDS Sample Number	Constituent	Result	Result Qualifier	Lab Qualifier	Units	Standard	Completion
20591	7/09/94	GW00942GA	Trichloroethene	3.00			UG/L	2.70	ALLUVIUM
20591	7/13/94	GW00962GA	Trichloroethene	6.00			UG/L	2.70	ALLUVIUM
2587	6/30/94	GW00927GA	Trichloroethene	42.00			UG/L	2.70	BEDROCK
2587	7/06/94	GW00935GA	Trichloroethene	43.00			UG/L	2.70	BEDROCK
2587	7/08/94	GW00941GA	Trichloroethene	38.00			UG/L	2.70	BEDROCK
2587	7/08/94	GW00941GADL	Trichloroethene	43.00	D		UG/L	2.70	BEDROCK
2587	7/11/94	GW00946GA	Trichloroethene	34.00			UG/L	2.70	BEDROCK
2587	7/11/94	GW00948GA	Trichloroethene	40.00			UG/L	2.70	BEDROCK

Field Evaluation Task
Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
1786	7/11/94	GW00949GA	Aluminum	UNFILTERED	83300.00		*	UG/L	27173.10	ALLUVIUM
20591	7/13/94	GW00962GA	Aluminum	UNFILTERED	43600.00		*	UG/L	27173.10	ALLUVIUM
1786	7/11/94	GW00949GA	Arsenic	UNFILTERED	10.50		N	UG/L	1.35	ALLUVIUM
20591	7/13/94	GW00962GA	Arsenic	UNFILTERED	3.30	B	N	UG/L	1.35	ALLUVIUM
41691	7/12/94	GW00950GA	Arsenic	UNFILTERED	3.50	B	N	UG/L	1.35	ALLUVIUM
1786	7/01/94	GW00931GA	Barium	FILTERED	246.00			UG/L	112.83	ALLUVIUM
1786	7/05/94	GW00933GA	Barium	FILTERED	261.00			UG/L	112.83	ALLUVIUM
1786	7/07/94	GW00938GA	Barium	FILTERED	175.00	B		UG/L	112.83	ALLUVIUM
1786	7/08/94	GW00940GA	Barium	FILTERED	244.00			UG/L	112.83	ALLUVIUM
1786	7/11/94	GW00949GA	Barium	FILTERED	237.00			UG/L	112.83	ALLUVIUM
1786	7/01/94	GW00931GA	Barium	UNFILTERED	244.00			UG/L	185.43	ALLUVIUM
1786	7/05/94	GW00933GA	Barium	UNFILTERED	249.00			UG/L	185.43	ALLUVIUM
1786	7/07/94	GW00938GA	Barium	UNFILTERED	241.00			UG/L	185.43	ALLUVIUM
1786	7/08/94	GW00940GA	Barium	UNFILTERED	246.00			UG/L	185.43	ALLUVIUM
1786	7/11/94	GW00949GA	Barium	UNFILTERED	908.00			UG/L	185.43	ALLUVIUM
20591	7/05/94	GW00934GA	Barium	FILTERED	145.00	B		UG/L	112.83	ALLUVIUM
20591	7/09/94	GW00942GA	Barium	FILTERED	144.00	B		UG/L	112.83	ALLUVIUM
20591	7/10/94	GW00944GA	Barium	FILTERED	150.00	B		UG/L	112.83	ALLUVIUM
20591	7/13/94	GW00962GA	Barium	FILTERED	507.00			UG/L	112.83	ALLUVIUM

Field Evaluation Task
Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
20591	7/13/94	GW00962GA	Barium	UNFILTERED	693.00			UG/L	185.43	ALLUVIUM
41691	7/02/94	GW00929GA	Barium	FILTERED	140.00	B		UG/L	112.83	ALLUVIUM
41691	7/03/94	GW00930GA	Barium	FILTERED	139.00	B		UG/L	112.83	ALLUVIUM
41691	7/06/94	GW00936GA	Barium	FILTERED	138.00	B		UG/L	112.83	ALLUVIUM
41691	7/09/94	GW00943GA	Barium	FILTERED	128.00	B		UG/L	112.83	ALLUVIUM
41691	7/12/94	GW00950GA	Barium	FILTERED	128.00	B		UG/L	112.83	ALLUVIUM
41691	7/12/94	GW00950GA	Barium	UNFILTERED	229.00			UG/L	185.43	ALLUVIUM
1786	7/11/94	GW00949GA	Beryllium	UNFILTERED	5.10			UG/L	1.84	ALLUVIUM
20591	7/13/94	GW00962GA	Beryllium	UNFILTERED	6.30			UG/L	1.84	ALLUVIUM
1786	7/11/94	GW00949GA	Chromium	UNFILTERED	87.10			UG/L	42.95	ALLUVIUM
20591	7/13/94	GW00962GA	Chromium	UNFILTERED	44.10			UG/L	42.95	ALLUVIUM
1786	7/11/94	GW00949GA	Cobalt	UNFILTERED	35.40	B		UG/L	9.36	ALLUVIUM
20591	7/13/94	GW00962GA	Cobalt	UNFILTERED	52.20			UG/L	9.36	ALLUVIUM
1786	7/11/94	GW00949GA	Copper	UNFILTERED	101.00			UG/L	17.51	ALLUVIUM
20591	7/13/94	GW00962GA	Copper	UNFILTERED	52.70			UG/L	17.51	ALLUVIUM

Field Evaluation Task
Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
1786	7/11/94	GW00949GA	Iron	UNFILTERED	84200.00			UG/L	25946.80	ALLUVIUM
20591	7/13/94	GW00962GA	Iron	FILTERED	1290.00			UG/L	72.97	ALLUVIUM
20591	7/13/94	GW00962GA	Iron	UNFILTERED	71500.00			UG/L	25946.80	ALLUVIUM
41691	7/02/94	GW00929GA	Iron	FILTERED	101.00			UG/L	72.97	ALLUVIUM
41691	7/03/94	GW00930GA	Iron	FILTERED	100.00	B		UG/L	72.97	ALLUVIUM
41691	7/06/94	GW00936GA	Iron	FILTERED	81.60	B		UG/L	72.97	ALLUVIUM
41691	7/09/94	GW00943GA	Iron	FILTERED	83.70	B		UG/L	72.97	ALLUVIUM
41691	7/12/94	GW00950GA	Iron	FILTERED	76.00	B		UG/L	72.97	ALLUVIUM
1786	7/11/94	GW00949GA	Lead	UNFILTERED	65.20		S	UG/L	9.76	ALLUVIUM
20591	7/13/94	GW00962GA	Lead	UNFILTERED	65.20		S	UG/L	9.76	ALLUVIUM
41691	7/12/94	GW00950GA	Lead	UNFILTERED	11.70			UG/L	9.76	ALLUVIUM
1786	7/01/94	GW00931GA	Lithium	FILTERED	352.00			UG/L	30.00	ALLUVIUM
1786	7/05/94	GW00933GA	Lithium	FILTERED	370.00			UG/L	30.00	ALLUVIUM
1786	7/07/94	GW00938GA	Lithium	FILTERED	244.00			UG/L	30.00	ALLUVIUM
1786	7/08/94	GW00940GA	Lithium	FILTERED	347.00			UG/L	30.00	ALLUVIUM
1786	7/11/94	GW00949GA	Lithium	FILTERED	342.00			UG/L	30.00	ALLUVIUM
1786	7/01/94	GW00931GA	Lithium	UNFILTERED	355.00			UG/L	15.80	ALLUVIUM

Field Evaluation Task
Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFDS Sample Number	Constituent	Type	Result	Lab Qualifier	Units	Background	Completion
1786	7/05/94	GM00933GA	Lithium	UNFILTERED	358.00		UG/L	15.80	ALLUVIUM
1786	7/07/94	GM00938GA	Lithium	UNFILTERED	346.00		UG/L	15.80	ALLUVIUM
1786	7/08/94	GM00940GA	Lithium	UNFILTERED	351.00		UG/L	15.80	ALLUVIUM
1786	7/11/94	GM00949GA	Lithium	UNFILTERED	399.00		UG/L	15.80	ALLUVIUM
20591	7/13/94	GM00962GA	Lithium	UNFILTERED	37.90	B	UG/L	15.80	ALLUVIUM
41691	7/02/94	GM00929GA	Lithium	UNFILTERED	22.80	B	UG/L	15.80	ALLUVIUM
41691	7/03/94	GM00930GA	Lithium	UNFILTERED	23.60	B	UG/L	15.80	ALLUVIUM
41691	7/06/94	GM00936GA	Lithium	UNFILTERED	23.40	B	UG/L	15.80	ALLUVIUM
41691	7/09/94	GM00943GA	Lithium	UNFILTERED	23.30	B	UG/L	15.80	ALLUVIUM
41691	7/12/94	GM00950GA	Lithium	UNFILTERED	30.70	B	UG/L	15.80	ALLUVIUM
1786	7/11/94	GM00949GA	Manganese	FILTERED	2.50	B	UG/L	2.00	ALLUVIUM
1786	7/11/94	GM00949GA	Manganese	UNFILTERED	672.00		UG/L	302.79	ALLUVIUM
20591	7/05/94	GM00934GA	Manganese	FILTERED	83.60		UG/L	2.00	ALLUVIUM
20591	7/09/94	GM00942GA	Manganese	FILTERED	29.40		UG/L	2.00	ALLUVIUM
20591	7/10/94	GM00944GA	Manganese	FILTERED	103.00		UG/L	2.00	ALLUVIUM
20591	7/13/94	GM00962GA	Manganese	FILTERED	1090.00		UG/L	2.00	ALLUVIUM
20591	7/13/94	GM00962GA	Manganese	UNFILTERED	1530.00		UG/L	302.79	ALLUVIUM
41691	7/02/94	GM00929GA	Manganese	FILTERED	634.00		UG/L	2.00	ALLUVIUM
41691	7/03/94	GM00930GA	Manganese	FILTERED	643.00		UG/L	2.00	ALLUVIUM

Field Evaluation Task
Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
41691	7/06/94	GW00936GA	Manganese	FILTERED	638.00			UG/L	2.00	ALLUVIUM
41691	7/09/94	GW00943GA	Manganese	FILTERED	623.00			UG/L	2.00	ALLUVIUM
41691	7/12/94	GW00950GA	Manganese	FILTERED	645.00			UG/L	2.00	ALLUVIUM
41691	7/02/94	GW00929GA	Manganese	UNFILTERED	615.00			UG/L	302.79	ALLUVIUM
41691	7/03/94	GW00930GA	Manganese	UNFILTERED	615.00			UG/L	302.79	ALLUVIUM
41691	7/06/94	GW00936GA	Manganese	UNFILTERED	621.00			UG/L	302.79	ALLUVIUM
41691	7/09/94	GW00943GA	Manganese	UNFILTERED	631.00			UG/L	302.79	ALLUVIUM
41691	7/12/94	GW00950GA	Manganese	UNFILTERED	762.00			UG/L	302.79	ALLUVIUM
20591	7/13/94	GW00962GA	Mercury	UNFILTERED	.23			UG/L	.20	ALLUVIUM
1786	7/11/94	GW00949GA	Nickel	UNFILTERED	81.00			UG/L	32.56	ALLUVIUM
20591	7/13/94	GW00962GA	Nickel	UNFILTERED	60.50			UG/L	32.56	ALLUVIUM
1786	7/01/94	GW00931GA	Selenium	FILTERED	200.00			UG/L	3.00	ALLUVIUM
1786	7/05/94	GW00933GA	Selenium	FILTERED	202.00			UG/L	3.00	ALLUVIUM
1786	7/07/94	GW00938GA	Selenium	FILTERED	202.00		*	UG/L	3.00	ALLUVIUM
1786	7/08/94	GW00940GA	Selenium	FILTERED	207.00		*	UG/L	3.00	ALLUVIUM
1786	7/11/94	GW00949GA	Selenium	FILTERED	220.00		*	UG/L	3.00	ALLUVIUM
1786	7/01/94	GW00931GA	Selenium	UNFILTERED	196.00			UG/L	2.00	ALLUVIUM
1786	7/05/94	GW00933GA	Selenium	UNFILTERED	225.00		S	UG/L	2.00	ALLUVIUM
1786	7/07/94	GW00938GA	Selenium	UNFILTERED	182.00		N	UG/L	2.00	ALLUVIUM
1786	7/08/94	GW00940GA	Selenium	UNFILTERED	188.00		N	UG/L	2.00	ALLUVIUM

Field Evaluation Task
Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
1786	7/11/94	GW00949GA	Selenium	UNFILTERED	188.00		N	UG/L	2.00	ALLUVIUM
1786	7/11/94	GW00949GA	Vanadium	UNFILTERED	193.00			UG/L	44.26	ALLUVIUM
20591	7/13/94	GW00962GA	Vanadium	UNFILTERED	82.00			UG/L	44.26	ALLUVIUM
1786	7/08/94	GW00940GA	Zinc	FILTERED	13.70	B		UG/L	12.44	ALLUVIUM
1786	7/11/94	GW00949GA	Zinc	FILTERED	12.80	B		UG/L	12.44	ALLUVIUM
1786	7/11/94	GW00949GA	Zinc	UNFILTERED	354.00			UG/L	58.02	ALLUVIUM
20591	7/13/94	GW00962GA	Zinc	UNFILTERED	187.00			UG/L	58.02	ALLUVIUM
41691	7/12/94	GW00950GA	Zinc	UNFILTERED	64.30			UG/L	58.02	ALLUVIUM

Field Evaluation Task

Metals Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
2587	7/11/94	GW00948GA	Aluminum	UNFILTERED	15600.00		*	UG/L	5577.41	BEDROCK
2587	7/11/94	GW00948GA	Arsenic	UNFILTERED	5.40	B	N	UG/L	1.53	BEDROCK
2587	7/11/94	GW00948GA	Chromium	UNFILTERED	102.00			UG/L	68.98	BEDROCK
2587	7/11/94	GW00948GA	Cobalt	UNFILTERED	15.70	B		UG/L	8.00	BEDROCK
2587	7/11/94	GW00948GA	Copper	UNFILTERED	27.80			UG/L	20.62	BEDROCK
2587	7/11/94	GW00948GA	Iron	FILTERED	16.40	B		UG/L	12.00	BEDROCK
2587	7/11/94	GW00948GA	Iron	UNFILTERED	24900.00			UG/L	5088.64	BEDROCK
2587	7/11/94	GW00948GA	Lead	UNFILTERED	19.60			UG/L	8.08	BEDROCK
2587	7/11/94	GW00948GA	Manganese	UNFILTERED	345.00			UG/L	103.48	BEDROCK
2587	7/11/94	GW00948GA	Nickel	FILTERED	55.70			UG/L	31.00	BEDROCK
2587	7/11/94	GW00948GA	Nickel	UNFILTERED	96.40			UG/L	60.83	BEDROCK
2587	7/11/94	GW00948GA	Vanadium	UNFILTERED	75.90			UG/L	15.90	BEDROCK
2587	7/11/94	GW00948GA	Zinc	UNFILTERED	115.00			UG/L	60.19	BEDROCK

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Error	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
1786	7/12/94	GW00949GA	Americium-241	UNFILTERED	.0140	.01300			PCI/L	.0117	ALLUVIUM
20591	7/13/94	GW00962GA	Americium-241	UNFILTERED	.0470	.01400			PCI/L	.0117	ALLUVIUM
41691	7/12/94	GW00950GA	Americium-241	UNFILTERED	.0120	.00700			PCI/L	.0117	ALLUVIUM
1786	7/01/94	GW00931GA	Gross Alpha	FILTERED	45.9500	10.46400			PCI/L	2.8179	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Alpha	FILTERED	44.9800	10.76000			PCI/L	2.8179	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Alpha	FILTERED	39.9200	9.84500			PCI/L	2.8179	ALLUVIUM
1786	7/08/94	GW00940GA	Gross Alpha	FILTERED	11.6300	2.07200			PCI/L	2.8179	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Alpha	FILTERED	32.4700	6.28000			PCI/L	2.8179	ALLUVIUM
1786	7/01/94	GW00931GA	Gross Alpha	UNFILTERED	55.5500	12.31900			PCI/L	2.8179	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Alpha	UNFILTERED	41.8000	8.83600			PCI/L	2.8179	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Alpha	UNFILTERED	41.7900	10.70700			PCI/L	2.8179	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Alpha	UNFILTERED	362.1000	62.54400			PCI/L	2.8179	ALLUVIUM
20591	7/05/94	GW00934GA	Gross Alpha	UNFILTERED	3.2400	1.16600			PCI/L	2.8179	ALLUVIUM
20591	7/13/94	GW00962GA	Gross Alpha	UNFILTERED	142.5000	17.66400			PCI/L	2.8179	ALLUVIUM
41691	7/06/94	GW00936GA	Gross Alpha	FILTERED	3.1540	1.44500			PCI/L	2.8179	ALLUVIUM
41691	7/12/94	GW00950GA	Gross Alpha	FILTERED	2.8270	1.29000			PCI/L	2.8179	ALLUVIUM
41691	7/06/94	GW00936GA	Gross Alpha	UNFILTERED	3.4590	1.37900			PCI/L	2.8179	ALLUVIUM
41691	7/12/94	GW00950GA	Gross Alpha	UNFILTERED	18.2800	4.50600			PCI/L	2.8179	ALLUVIUM

Field Evaluation Task
Radionuclides Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Error	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
1786	7/01/94	GW00931GA	Gross Beta	FILTERED	23.2700	5.24700			PCI/L	5.3860	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Beta	FILTERED	22.4700	5.13900			PCI/L	5.3860	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Beta	FILTERED	16.2400	4.98200			PCI/L	5.3860	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Beta	FILTERED	12.2100	2.61300			PCI/L	5.3860	ALLUVIUM
1786	7/01/94	GW00931GA	Gross Beta	UNFILTERED	18.6400	4.86900			PCI/L	5.3860	ALLUVIUM
1786	7/05/94	GW00933GA	Gross Beta	UNFILTERED	12.8100	3.72800			PCI/L	5.3860	ALLUVIUM
1786	7/07/94	GW00938GA	Gross Beta	UNFILTERED	20.3300	4.87800			PCI/L	5.3860	ALLUVIUM
1786	7/08/94	GW00940GA	Gross Beta	UNFILTERED	9.8360	1.19400			PCI/L	5.3860	ALLUVIUM
1786	7/12/94	GW00949GA	Gross Beta	UNFILTERED	255.3000	35.04500			PCI/L	5.3860	ALLUVIUM
20591	7/05/94	GW00934GA	Gross Beta	FILTERED	14.2800	1.41500			PCI/L	5.3860	ALLUVIUM
20591	7/10/94	GW00944GA	Gross Beta	FILTERED	12.1300	1.25000			PCI/L	5.3860	ALLUVIUM
20591	7/13/94	GW00962GA	Gross Beta	FILTERED	6.0300	1.04800			PCI/L	5.3860	ALLUVIUM
20591	7/05/94	GW00934GA	Gross Beta	UNFILTERED	13.6100	1.24500			PCI/L	5.3860	ALLUVIUM
20591	7/10/94	GW00944GA	Gross Beta	UNFILTERED	10.3500	1.15400			PCI/L	5.3860	ALLUVIUM
20591	7/13/94	GW00962GA	Gross Beta	UNFILTERED	143.1000	9.24900			PCI/L	5.3860	ALLUVIUM
41691	7/02/94	GW00929GA	Gross Beta	FILTERED	7.1040	1.23200			PCI/L	5.3860	ALLUVIUM
41691	7/03/94	GW00930GA	Gross Beta	FILTERED	6.1380	1.16900			PCI/L	5.3860	ALLUVIUM
41691	7/06/94	GW00936GA	Gross Beta	FILTERED	6.8020	1.08200			PCI/L	5.3860	ALLUVIUM
41691	7/09/94	GW00943GA	Gross Beta	FILTERED	7.4490	1.22800			PCI/L	5.3860	ALLUVIUM
41691	7/12/94	GW00950GA	Gross Beta	FILTERED	5.8930	1.04900			PCI/L	5.3860	ALLUVIUM
41691	7/02/94	GW00929GA	Gross Beta	UNFILTERED	6.9190	1.05000			PCI/L	5.3860	ALLUVIUM

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample		Type	Result	Error	Result Qualifier	Lab Qualifier	Background		Completion
		Number	Constituent						Units	UTL	
41691	7/03/94	GW00930GA	Gross Beta	UNFILTERED	7.4960	1.10700			PCI/L	5.3860	ALLUVIUM
41691	7/06/94	GW00936GA	Gross Beta	UNFILTERED	7.0780	1.05200			PCI/L	5.3860	ALLUVIUM
41691	7/09/94	GW00943GA	Gross Beta	UNFILTERED	7.4440	1.10300			PCI/L	5.3860	ALLUVIUM
41691	7/12/94	GW00950GA	Gross Beta	UNFILTERED	22.7300	3.31200			PCI/L	5.3860	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-233,234	FILTERED	40.8200	2.59500			PCI/L	2.8559	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-233,234	FILTERED	38.7100	2.37000			PCI/L	2.8559	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-233,234	FILTERED	37.4100	2.26000			PCI/L	2.8559	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-233,234	FILTERED	38.6100	2.08000			PCI/L	2.8559	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-233,234	FILTERED	35.2200	4.20200			PCI/L	2.8559	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-233,234	UNFILTERED	45.5600	3.22600			PCI/L	2.8559	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-233,234	UNFILTERED	38.7700	2.34600			PCI/L	2.8559	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-233,234	UNFILTERED	40.5300	1.64900			PCI/L	2.8559	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-233,234	UNFILTERED	38.9800	2.94000			PCI/L	2.8559	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-233,234	UNFILTERED	37.0600	2.02700			PCI/L	2.8559	ALLUVIUM
20591	7/13/94	GW00962GA	Uranium-233,234	UNFILTERED	3.0810	.67600			PCI/L	2.8559	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-235	FILTERED	1.2860	.24000			PCI/L	.4073	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-235	FILTERED	1.2200	.21900			PCI/L	.4073	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-235	FILTERED	1.5770	.24800			PCI/L	.4073	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-235	FILTERED	1.0690	.17800			PCI/L	.4073	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-235	FILTERED	1.3220	.42200			PCI/L	.4073	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-235	UNFILTERED	1.8880	.31600			PCI/L	.4073	ALLUVIUM

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Error	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
1786	7/05/94	GW00933GA	Uranium-235	UNFILTERED	1.0970	.19300			PCI/L	.4073	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-235	UNFILTERED	1.4750	.15600			PCI/L	.4073	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-235	UNFILTERED	1.2590	.27900			PCI/L	.4073	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-235	UNFILTERED	1.3000	.20000			PCI/L	.4073	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-238	FILTERED	30.7100	2.00900			PCI/L	1.8387	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-238	FILTERED	28.2300	1.78800			PCI/L	1.8387	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-238	FILTERED	29.1400	1.81300			PCI/L	1.8387	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-238	FILTERED	28.4700	1.58400			PCI/L	1.8387	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-238	FILTERED	26.3400	3.25400			PCI/L	1.8387	ALLUVIUM
1786	7/01/94	GW00931GA	Uranium-238	UNFILTERED	32.1100	2.35200			PCI/L	1.8387	ALLUVIUM
1786	7/05/94	GW00933GA	Uranium-238	UNFILTERED	28.9100	1.80100			PCI/L	1.8387	ALLUVIUM
1786	7/07/94	GW00938GA	Uranium-238	UNFILTERED	29.2300	1.23100			PCI/L	1.8387	ALLUVIUM
1786	7/08/94	GW00940GA	Uranium-238	UNFILTERED	27.8100	2.18000			PCI/L	1.8387	ALLUVIUM
1786	7/12/94	GW00949GA	Uranium-238	UNFILTERED	27.7500	1.56800			PCI/L	1.8387	ALLUVIUM
20591	7/13/94	GW00962GA	Uranium-238	UNFILTERED	2.8900	.61900			PCI/L	1.8387	ALLUVIUM

Field Evaluation Task

Radionuclides Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Type	Result	Error	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
2587	7/12/94	GW00948GA	Gross Alpha	UNFILTERED	60.3200	9.47100			PCI/L	7.25	BEDROCK
2587	7/12/94	GW00948GA	Gross Beta	UNFILTERED	35.7100	6.05600			PCI/L	8.00	BEDROCK

Field Evaluation Task

Volatile Organic Constituents Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
20591	7/05/94	GW00934GA	Carbon Tetrachloride	48.00	E		UG/L	4.37	ALLUVIUM
20591	7/05/94	GW00934GADL	Carbon Tetrachloride	65.00	D		UG/L	4.37	ALLUVIUM
20591	7/09/94	GW00942GA	Carbon Tetrachloride	26.00			UG/L	4.37	ALLUVIUM
20591	7/10/94	GW00944GA	Carbon Tetrachloride	26.00			UG/L	4.37	ALLUVIUM
20591	7/13/94	GW00962GA	Carbon Tetrachloride	56.00			UG/L	4.37	ALLUVIUM
1786	7/05/94	GW00931GA	Cis-1,2-Dichloroethene	.30			UG/L	.20	ALLUVIUM
1786	7/05/94	GW00931GADUP	Cis-1,2-Dichloroethene	.30			UG/L	.20	ALLUVIUM
20591	7/05/94	GW00934GA	Cis-1,2-Dichloroethene	6.00			UG/L	.20	ALLUVIUM
20591	7/05/94	GW00934GADL	Cis-1,2-Dichloroethene	8.00	D		UG/L	.20	ALLUVIUM
20591	7/09/94	GW00942GA	Cis-1,2-Dichloroethene	4.00			UG/L	.20	ALLUVIUM
20591	7/10/94	GW00944GA	Cis-1,2-Dichloroethene	4.00			UG/L	.20	ALLUVIUM
20591	7/13/94	GW00962GA	Cis-1,2-Dichloroethene	8.00			UG/L	.20	ALLUVIUM
20591	7/05/94	GW00934GA	Tetrachloroethene	24.00			UG/L	5.00	ALLUVIUM
20591	7/05/94	GW00934GADL	Tetrachloroethene	31.00	D		UG/L	5.00	ALLUVIUM
20591	7/09/94	GW00942GA	Tetrachloroethene	14.00			UG/L	5.00	ALLUVIUM
20591	7/10/94	GW00944GA	Tetrachloroethene	13.00			UG/L	5.00	ALLUVIUM
20591	7/13/94	GW00962GA	Tetrachloroethene	34.00			UG/L	5.00	ALLUVIUM
20591	7/05/94	GW00934GADL	Trichloroethene	6.00	D		UG/L	5.00	ALLUVIUM
20591	7/13/94	GW00962GA	Trichloroethene	6.00			UG/L	5.00	ALLUVIUM

Field Evaluation Task

Volatile Organic Constituents Exceeding Rocky Flats Groundwater Background

Well	Sample Date	RFEDS Sample Number	Constituent	Result	Result Qualifier	Lab Qualifier	Units	Background UTL	Completion
2587	6/30/94	GW00927GA	Carbon Tetrachloride	75.00			UG/L	5.00	BEDROCK
2587	7/06/94	GW00935GA	Carbon Tetrachloride	78.00			UG/L	5.00	BEDROCK
2587	7/08/94	GW00941GA	Carbon Tetrachloride	64.00	E		UG/L	5.00	BEDROCK
2587	7/08/94	GW00941GADL	Carbon Tetrachloride	75.00	D		UG/L	5.00	BEDROCK
2587	7/11/94	GW00946GA	Carbon Tetrachloride	63.00			UG/L	5.00	BEDROCK
2587	7/11/94	GW00948GA	Carbon Tetrachloride	64.00			UG/L	5.00	BEDROCK
2587	6/30/94	GW00927GA	Cis-1,2-Dichloroethene	6.00			UG/L	.20	BEDROCK
2587	7/06/94	GW00935GA	Cis-1,2-Dichloroethene	7.00			UG/L	.20	BEDROCK
2587	7/08/94	GW00941GA	Cis-1,2-Dichloroethene	6.00			UG/L	.20	BEDROCK
2587	7/08/94	GW00941GADL	Cis-1,2-Dichloroethene	7.00	D		UG/L	.20	BEDROCK
2587	7/11/94	GW00946GA	Cis-1,2-Dichloroethene	5.00			UG/L	.20	BEDROCK
2587	7/11/94	GW00948GA	Cis-1,2-Dichloroethene	6.00			UG/L	.20	BEDROCK
2587	6/30/94	GW00927GA	Tetrachloroethene	250.00			UG/L	4.57	BEDROCK
2587	7/06/94	GW00935GA	Tetrachloroethene	260.00			UG/L	4.57	BEDROCK
2587	7/08/94	GW00941GA	Tetrachloroethene	150.00	E		UG/L	4.57	BEDROCK
2587	7/08/94	GW00941GADL	Tetrachloroethene	230.00	D		UG/L	4.57	BEDROCK
2587	7/11/94	GW00946GA	Tetrachloroethene	210.00			UG/L	4.57	BEDROCK
2587	7/11/94	GW00948GA	Tetrachloroethene	230.00			UG/L	4.57	BEDROCK
2587	6/30/94	GW00927GA	Trichloroethene	42.00			UG/L	5.00	BEDROCK
2587	7/06/94	GW00935GA	Trichloroethene	43.00			UG/L	5.00	BEDROCK
2587	7/08/94	GW00941GA	Trichloroethene	38.00			UG/L	5.00	BEDROCK
2587	7/08/94	GW00941GADL	Trichloroethene	43.00	D		UG/L	5.00	BEDROCK
2587	7/11/94	GW00946GA	Trichloroethene	34.00			UG/L	5.00	BEDROCK

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PATH3D BENCHMARK RESULTS

The PATH3D particle tracking software used in this project was acquired from the original software vendor. As acquired, the software was compiled and ready to execute on an IBM compatible personal computer under the DOS operating system. In addition to the executable files, the original source code files were also provided.

To be compatible with other elements of this project, the FORTRAN source code for the PATH3D software was transferred to, and compiled on an IBM RS6000 UNIX workstation. This is the same UNIX workstation used to perform the MODFLOW groundwater flow simulations used for this project. The only changes made to the source code prior to compilation were changes to two file input unit numbers. These changes were made to provide compatibility with the FORTRAN compiler on the RS6000 workstation and with the MODFLOW flow model. These changes have no influence on numeric computation within the model.

To assure that the version of PATH3D running on the UNIX workstation provides results consistent with the vendor-supplied compiled personal computer version, the output from three separate example runs were compared. Input files for each of the three examples were provided by the software vendor as part of the software package. A comparison of the output from the vendor-supplied executable and that from the recompiled executable on the UNIX workstation indicates there are no computational differences between these two files. A listing of the output from these three examples is given below.

Output for example 1 from original PATH3D PC executable file

```

*****
*                                     *
*               P A T H 3 D          *
*      A Ground-Water Path and Travel-Time Simulator      *
*               (V. 3.20)            *
*                                     *
*****

```

```

EXAMPLE NO. 1:
2-D CROSS SECTION
FLOW MODEL CONSISTS OF 20 LAYERS 1 ROWS 50 COLUMNS
NUMBER OF STRESS PERIOD(S) IN SIMULATION = 1
TIME UNIT USED IN THE MODEL IS DAYS
PACKAGE: BCF WEL DRN RIV EVT GHB RCH STR
UNIT: 11 0 0 0 0 0 0 0 0
FLOW FIELD IS STEADY-STATE (ISS NOT 0)
WETTING CAPABILITY IS NOT ACTIVE
HEAD AT CELLS THAT CONVERT TO DRY- .10000E+31
MAXIMUM NUMBER OF PARTICLES ALLOWED = 1
FILE (P3DPLOT.DAT) SAVED IN UNIT 4 FOR PLOTTING PATH LINES
INITIAL PARTICLE POSITIONS ARE ENTERED IN X, Y, Z COORDINATES
PARTICLE REMOVAL OPTION (1) IS SELECTED
11249 ELEMENTS OF THE Y ARRAY USED OUT OF 9999999

```

```

BOUNDARY ARRAY (IBOUND) = -1 FOR LAYER 1
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 2
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 3
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 4
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 5
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 6
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 7
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 8
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 9
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 10
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 11
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 12
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 13
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 14
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 15
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 16
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 17
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 18
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 19
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 20

```

HEAD AT INACTIVE CELLS = 999.0000

STARTING HYDRAULIC HEADS FOR LAYER 1 READ ON UNIT 1 USING FORMAT: '(10F8.4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
46	47	48	49	50										

1	40.0	40.0	40.1	40.1	40.1	40.1	40.2	40.2	40.2	40.2	40.2	40.3	40.3	40.3
	40.3	40.3	40.4	40.4	40.4	40.4	40.5	40.5	40.5	40.5	40.5	40.6	40.6	40.6
	40.6	40.6	40.6	40.7	40.7	40.7	40.7	40.8	40.8	40.8	40.8	40.9	40.9	40.9
	40.9	40.9	40.9	41.0	41.0									

```

STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 2
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 3
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 4
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 5
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 6
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 7
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 8
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 9
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 10
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 11
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 12
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 13
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 14
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 15
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 16
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 17
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 18
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 19
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 20

```

LAYER NUMBER AQUIPER TYPE

1	1
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0

19
20

0
0

ANISOTROPY RATIO (K _y /K _x)	=	1.000000	
WIDTH ALONG ROWS (DEL _R)	=	2.000000	
WIDTH ALONG COL. (DEL _C)	=	1.000000	
HY. COND. ALONG ROW (K _x)	=	20.000000	FOR LAYER 1
BOT (NOT USED BY PATH3D)	=	38.000000	FOR LAYER 1
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 1
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 2
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 2
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 3
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 3
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 4
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 4
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 5
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 5
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 6
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 6
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 7
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 7
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 8
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 8
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 9
VERT. HYD. COND./THICK.	=	.9524000	FOR LAYER 9
TRANS. ALONG ROWS (T _x)	=	2.000000	FOR LAYER 10
VERT. HYD. COND./THICK.	=	.5000000	FOR LAYER 10
TRANS. ALONG ROWS (T _x)	=	2.000000	FOR LAYER 11
VERT. HYD. COND./THICK.	=	.5000000	FOR LAYER 11
TRANS. ALONG ROWS (T _x)	=	2.000000	FOR LAYER 12
VERT. HYD. COND./THICK.	=	.5000000	FOR LAYER 12
TRANS. ALONG ROWS (T _x)	=	2.000000	FOR LAYER 13
VERT. HYD. COND./THICK.	=	.5000000	FOR LAYER 13
TRANS. ALONG ROWS (T _x)	=	2.000000	FOR LAYER 14
VERT. HYD. COND./THICK.	=	.5000000	FOR LAYER 14
TRANS. ALONG ROWS (T _x)	=	2.000000	FOR LAYER 15
VERT. HYD. COND./THICK.	=	.9524000	FOR LAYER 15
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 16
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 16
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 17
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 17
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 18
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 18
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 19
VERT. HYD. COND./THICK.	=	10.000000	FOR LAYER 19
TRANS. ALONG ROWS (T _x)	=	40.000000	FOR LAYER 20
TOP ELEV. OF 1ST LAYER	=	40.000000	FOR LAYER 1
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 1
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 2
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 3
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 4
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 5
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 6
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 7
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 8
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 9
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 10
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 11
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 12
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 13
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 14
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 15
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 16
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 17
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 18
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 19
CELL THICKNESS (D _Z)	=	2.000000	FOR LAYER 20
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 1
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 2
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 3
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 4
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 5
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 6
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 7
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 8
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 9
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 10
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 11
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 12
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 13
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 14
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 15
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 16
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 17
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 18
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 19
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER 20

TRACKING START TIME (TIME1) = .0000000
TRACKING END TIME (TIME2) = -5000.000
ERROR CRITERION (EPS) = .1000000E-02
INITIAL TRACKING STEPSIZE = 1.000000
MAXIMUM TRACKING STEPS ALLOWED = 200
INTERVAL FOR SAVING INTERMEDIATE RESULTS = 1
OPTION FOR PRINTING INTERMEDIATE RESULTS = 1

PARTICLE STARTING POSITIONS
PARTICLE NO. X Y Z
1 1.0000 1.0000 1.0000

STRESS PERIOD NO. 1

TIME STEP NO. 1

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES AND TRAVEL TIMES

PARTICLE NO.	X	Y	Z	TIME
1.000000	1.000000	1.000000	1.000000	.0000000
1.447983	1.000000	2.377378	-1.8865356	
1.689094	1.000000	3.484905	-1.688833	
2.260835	1.000000	5.822359	-3.908461	
2.865899	1.000000	7.810176	-6.423677	
3.650099	1.000000	9.852192	-9.630926	
4.779618	1.000000	11.88647	-13.83143	
5.998296	1.000000	13.38876	-17.83507	
8.062387	1.000000	14.94112	-23.43160	
10.94374	1.000000	16.15647	-29.68211	
14.55102	1.000000	17.07000	-36.10947	
18.97880	1.000000	17.74929	-42.72905	
21.16464	1.000000	17.98953	-45.69310	
21.30883	1.000000	18.11040	-47.27416	
21.35938	1.000000	18.22014	-48.71148	
21.56215	1.000000	18.65786	-54.46072	
22.37314	1.000000	20.33887	-77.45772	
23.05778	1.000000	21.86279	-99.49593	
24.63166	1.000000	26.15693	-165.0653	
25.26358	1.000000	28.38137	-201.4057	
25.56163	1.000000	29.74449	-223.9082	
25.68972	1.000000	30.00900	-228.2942	
26.61413	1.000000	30.24702	-232.4786	
27.92472	1.000000	30.55466	-238.2462	
33.57249	1.000000	31.51129	-261.3168	
41.33440	1.000000	32.24084	-290.0969	
52.85384	1.000000	32.43695	-330.4456	
70.82515	1.000000	30.66946	-397.2947	
73.19823	1.000000	30.12231	-407.5370	
73.70692	1.000000	29.98158	-409.9894	
73.74242	1.000000	29.83048	-412.6070	
73.88410	1.000000	29.22473	-423.0772	
74.56139	1.000000	26.59618	-464.9581	
75.57233	1.000000	23.71146	-509.8444	
76.43431	1.000000	21.57964	-541.4313	
77.62540	1.000000	19.02223	-577.0383	
77.96504	1.000000	18.33121	-586.5191	
78.10599	1.000000	18.02254	-590.4717	
79.27317	1.000000	17.89060	-592.1342	
80.38274	1.000000	17.76472	-593.6342	
82.10529	1.000000	17.54512	-596.0491	
84.95253	1.000000	17.08352	-600.3389	
88.02973	1.000000	16.38130	-605.5984	
90.76443	1.000000	15.37993	-611.0862	
93.04468	1.000000	14.00929	-616.6804	
94.78898	1.000000	12.24710	-621.8956	
96.13236	1.000000	10.06135	-626.6640	
97.45743	1.000000	6.555615	-631.8723	
98.14637	1.000000	4.037750	-634.5739	
98.75540	1.000000	1.421205	-636.4404	
99.37796	1.000000	-.7439667E-08	-637.3491	

REMOVED: LAST POSITION EXIT FROM MODEL EDGE

>>ALL PARTICLES HAVE ALREADY BEEN REMOVED

Output for example 1 from RFP implementation of PATH3D

```

*****
+
+           P A T H 3 D
+   A Ground-Water Path and Travel-Time Simulator
+   (V. 3.20)
+
*****

```

Enter Name for Particle Tracking Input File:
Enter Name of Input Head File:
Enter U if the head file is UNFORMATTED;
Otherwise, enter format of the head file:
Print out heads for checking? (Enter Y or N)
Enter Name for BAS Package Input File:

EXAMPLE NO. 1:

2-D CROSS SECTION
FLOW MODEL CONSISTS OF 20 LAYERS 1 ROWS 50 COLUMNS

NUMBER OF STRESS PERIOD(S) IN SIMULATION = 1

TIME UNIT USED IN THE MODEL IS DAYS

PACKAGE: BCF WEL DRN RIV EVT GHB RCH STR

UNIT: 11 0 0 0 0 0 0 0 0

Enter Name for BCF Package Input File:

FLOW FIELD IS STEADY-STATE (ISS NOT 0)

WETTING CAPABILITY IS NOT ACTIVE

HEAD AT CELLS THAT CONVERT TO DRY= .00000E+00

MAXIMUM NUMBER OF PARTICLES ALLOWED = 1

FILE [P3DPLT.DAT] SAVED IN UNIT 4 FOR PLOTTING PATH LINES

INITIAL PARTICLE POSITIONS ARE ENTERED IN X, Y, Z COORDINATES

PARTICLE REMOVAL OPTION [1] IS SELECTED

11249 ELEMENTS OF THE Y ARRAY USED OUT OF 800000

```

BOUNDARY ARRAY (IBOUND) = -1 FOR LAYER 1
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 2
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 3
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 4
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 5
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 6
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 7
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 8
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 9
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 10
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 11
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 12
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 13
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 14
BOUNDARY ARRAY (IBOUND) = 2 FOR LAYER 15
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 16
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 17
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 18
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 19
BOUNDARY ARRAY (IBOUND) = 1 FOR LAYER 20

```

HEAD AT INACTIVE CELLS = 999.0000

STARTING HYDRAULIC HEADS FOR LAYER 1 READ ON UNIT 1 USING FORMAT: "(10P8.4)"

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
46	47	48	49	50											

1	40.0	40.0	40.1	40.1	40.1	40.1	40.1	40.2	40.2	40.2	40.2	40.2	40.3	40.3	40.3
	40.3	40.3	40.4	40.4	40.4	40.4	40.4	40.5	40.5	40.5	40.5	40.5	40.6	40.6	40.6
	40.6	40.6	40.6	40.7	40.7	40.7	40.7	40.7	40.8	40.8	40.8	40.8	40.9	40.9	40.9
	40.9	40.9	40.9	41.0	41.0										


```

STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 2
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 3
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 4
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 5
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 6
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 7
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 8
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 9
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 10
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 11
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 12
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 13
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 14
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 15
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 16
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 17
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 18
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 19
STARTING HYDRAULIC HEADS = 40.00000 FOR LAYER 20

```

LAYER NUMBER AQUIFER TYPE

LAYER NUMBER	AQUIFER TYPE
1	1
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0

12
13
14
15
16
17
18
19
20

0
0
0
0
0
0
0
0
0

ANISOTROPY RATIO (Ky/Kx) =	1.000000	
WIDTH ALONG ROWS (DELX) =	2.000000	
WIDTH ALONG COL. (DELY) =	1.000000	
HY. COND. ALONG ROW (Kx) =	20.000000	FOR LAYER 1
BOT (NOT USED BY PATH3D) =	38.000000	FOR LAYER 1
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 1
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 2
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 2
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 3
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 3
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 4
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 4
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 5
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 5
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 6
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 6
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 7
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 7
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 8
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 8
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 9
VERT. HYD. COND./THICK. =	.9524000	FOR LAYER 9
TRANS. ALONG ROWS (Tx) =	2.000000	FOR LAYER 10
VERT. HYD. COND./THICK. =	.5000000	FOR LAYER 10
TRANS. ALONG ROWS (Tx) =	2.000000	FOR LAYER 11
VERT. HYD. COND./THICK. =	.5000000	FOR LAYER 11
TRANS. ALONG ROWS (Tx) =	2.000000	FOR LAYER 12
VERT. HYD. COND./THICK. =	.5000000	FOR LAYER 12
TRANS. ALONG ROWS (Tx) =	2.000000	FOR LAYER 13
VERT. HYD. COND./THICK. =	.5000000	FOR LAYER 13
TRANS. ALONG ROWS (Tx) =	2.000000	FOR LAYER 14
VERT. HYD. COND./THICK. =	.5000000	FOR LAYER 14
TRANS. ALONG ROWS (Tx) =	2.000000	FOR LAYER 15
VERT. HYD. COND./THICK. =	.9524000	FOR LAYER 15
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 16
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 16
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 17
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 17
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 18
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 18
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 19
VERT. HYD. COND./THICK. =	10.000000	FOR LAYER 19
TRANS. ALONG ROWS (Tx) =	40.000000	FOR LAYER 20
TOP ELEV. OF 1ST LAYER	40.000000	FOR LAYER 1
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 1
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 2
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 3
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 4
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 5
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 6
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 7
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 8
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 9
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 10
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 11
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 12
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 13
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 14
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 15
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 16
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 17
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 18
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 19
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 20
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 1
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 2
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 3
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 4
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 5
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 6
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 7
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 8
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 9
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 10
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 11
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 12
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 13
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 14
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 15
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 16
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 17
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 18
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 19
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 20

TRACKING START TIME (TIME1) = .0000000E+00
 TRACKING END TIME (TIME2) = -5000.000
 ERROR CRITERION (EPS) = .1000000E-02
 INITIAL TRACKING STEPSIZE = 1.000000
 MAXIMUM TRACKING STEPS ALLOWED = 200
 INTERVAL FOR SAVING INTERMEDIATE RESULTS = 1
 OPTION FOR PRINTING INTERMEDIATE RESULTS = 1

PARTICLE STARTING POSITIONS

PARTICLE NO. X Y Z
 1 1.0000 1.0000 1.0000

 STRESS PERIOD NO. 1

 STRESS PERIOD NO. 1

TIME STEP NO. 1

TIME STEP NO. 1

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

=====

PARTICLE COORDINATES AND TRAVEL TIMES

=====

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME
1.000000	1.000000	1.000000	1.000000	.0000000E+00
1.447983	1.000000	2.377378	-	.8865356
1.689094	1.000000	3.484905	-	1.688833
2.260835	1.000000	5.822359	-	3.908461
2.865899	1.000000	7.810176	-	6.423677
3.650099	1.000000	9.852192	-	9.630926
4.779618	1.000000	11.88647	-	13.83143
5.998296	1.000000	13.38876	-	17.83507
8.062387	1.000000	14.94112	-	23.43160
10.94374	1.000000	16.15647	-	29.68211
14.55102	1.000000	17.07000	-	36.10947
18.97880	1.000000	17.74929	-	42.72905
21.16464	1.000000	17.98953	-	45.69310
21.30883	1.000000	18.11040	-	47.27416
21.35938	1.000000	18.22014	-	48.71148
21.56215	1.000000	18.65786	-	54.46072
22.37314	1.000000	20.33887	-	77.45772
23.05778	1.000000	21.86279	-	99.49593
24.63166	1.000000	26.15693	-	165.0653
25.26358	1.000000	28.38137	-	201.4057
25.56163	1.000000	29.74449	-	223.9082
25.68972	1.000000	30.00900	-	228.2942
26.61413	1.000000	30.24702	-	232.4786
27.92472	1.000000	30.55466	-	238.2462
33.57249	1.000000	31.51129	-	261.3168
41.33440	1.000000	32.24084	-	290.0969
52.85384	1.000000	32.43695	-	330.4456
70.82515	1.000000	30.66946	-	397.2947
73.19823	1.000000	30.12231	-	407.5370
73.70692	1.000000	29.98158	-	409.9894
73.74242	1.000000	29.83048	-	412.6070
73.88410	1.000000	29.22473	-	423.0772
74.56139	1.000000	26.59618	-	464.9581
75.57233	1.000000	23.71146	-	509.8444
76.43431	1.000000	21.57964	-	541.4313
77.62540	1.000000	19.02223	-	577.0383
77.96504	1.000000	18.33121	-	586.5191
78.10599	1.000000	18.02254	-	590.4717
79.27317	1.000000	17.89060	-	592.1342
80.38274	1.000000	17.76472	-	593.6342
82.10529	1.000000	17.54512	-	596.0491
84.95253	1.000000	17.08352	-	600.3389
88.02973	1.000000	16.38130	-	605.5984
90.76443	1.000000	15.37993	-	611.0862
93.04468	1.000000	14.00929	-	616.6804
94.78898	1.000000	12.24710	-	621.8956
96.13236	1.000000	10.06135	-	626.6640
97.45743	1.000000	6.555615	-	631.8723
98.14637	1.000000	4.037750	-	634.5739
98.75540	1.000000	1.421205	-	636.4404
99.37796	1.000000	-	-7439667E-08	-637.3491

REMOVED: LAST POSITION EXIT FROM MODEL EDGE

>>ALL PARTICLES HAVE ALREADY BEEN REMOVED

Output for example 2 from original PATH3D PC executable file

```

*****
+
+           P A T H 3 D
+   A Ground-Water Path and Travel-Time Simulator
+           (V. 3.20)
+
*****

```

```

EXAMPLE 2:
2-D TRANSIENT PLANAR VIEW
FLOW MODEL CONSISTS OF      1 LAYERS   31 ROWS   31 COLUMNS
NUMBER OF STRESS PERIOD(S) IN SIMULATION =      1
TIME UNIT USED IN THE MODEL IS MINUTES
PACKAGE: BCF WEL DRN RIV EVT GHB RCH STR
UNIT: 11 12 0 0 0 0 0 0 0 0
FLOW FIELD IS TRANSIENT (ISS=0)
WETTING CAPABILITY IS NOT ACTIVE
HEAD AT CELLS THAT CONVERT TO DRY= .10000E+31
MAXIMUM NUMBER OF WELLS =      1
MAXIMUM NUMBER OF PARTICLES ALLOWED =      5
FILE [P3DPL0T.DAT] SAVED IN UNIT 4 FOR PLOTTING PATH LINES
INITIAL PARTICLE POSITIONS ARE ENTERED IN X, Y, Z COORDINATES
PARTICLE REMOVAL OPTION [1] IS SELECTED
11754 ELEMENTS OF THE Y ARRAY USED OUT OF 9999999

```

BOUNDARY ARRAY (IBOUND) FOR LAYER 1 READ ON UNIT 1 USING FORMAT: '(31I2)

HEAD AT INACTIVE CELLS = 999.0000

STARTING HYDRAULIC HEADS = 20.00000 FOR LAYER 1

LAYER NUMBER AQUIFER TYPE

1 0

ANISOTROPY RATIO (Ky/Kx) = 1.000000

WIDTH ALONG ROWS (DELR) READ ON UNIT 11 USING FORMAT: '(20F4.0)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	200.00	200.00	200.00	200.00	200.00	100.00	50.00	40.00	30.00	20.00	10.00	8.00	7.00	6.00	5.00
	4.00	3.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1.00														

WIDTH ALONG COL. (DELC) READ ON UNIT 11 USING FORMAT: '(20F4.0)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	200.00	200.00	200.00	200.00	100.00	80.00	40.00	20.00	10.00	5.00	5.00	5.00	4.00	3.00	2.00
	1.00	2.00	3.00	4.00	5.00	5.00	10.00	20.00	40.00	80.00	100.00	200.00	200.00	200.00	200.00
	200.00														

SC1 (NOT USED BY PATH3D) = .2000000E-02 FOR LAYER 1
 TRANS. ALONG ROWS (Tx) = .2000000E-01 FOR LAYER 1
 TOP ELEV. OF 1ST LAYER = 10.00000 FOR LAYER 1
 CELL THICKNESS (DZ) = 10.00000 FOR LAYER 1
 POROSITY*RETARD. FACTOR = .4000000 FOR LAYER 1

TRACKING START TIME (TIME1) = .0000000
 TRACKING END TIME (TIME2) = 1000000.
 ERROR CRITERION (EPS) = .1000000E-02
 INITIAL TRACKING STEPSIZE = 1.000000
 MAXIMUM TRACKING STEPS ALLOWED = 100
 INTERVAL FOR SAVING INTERMEDIATE RESULTS = 1
 OPTION FOR PRINTING INTERMEDIATE RESULTS = 2

PARTICLE STARTING POSITIONS

PARTICLE NO.	X	Y	Z
1	1297.5	1068.5	5.0000
2	1297.5	1071.5	5.0000
3	1297.5	1074.5	5.0000
4	1297.5	1077.5	5.0000
5	1297.5	1080.5	5.0000

STRESS PERIOD NO. 1

LENGTH OF THIS STRESS PERIOD = 20000.00
 NUMBER OF TIME STEPS FOR HEAD SOLUTION = 20
 TIME STEP MULTIPLIER = 1.100000

NUMBER OF WELLS IN CURRENT STRESS PERIOD = 1

WELL NO.	LAYER	ROW	COLUMN	Q
1	1	16	21	-.1000000

TIME STEP NO. 1

FROM TIME = .00000 TO 149.19

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

 PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

```

=====
PARTICLE NO. 1
X Y Z TIME Vx Vy Vz
1297.5 1068.5 5.0000 .00000 - .485E-03 .000E+00 .000E+00
1297.5 1068.5 5.0000 1.0000 - .485E-03 .000E+00 .000E+00
1297.5 1068.5 5.0000 5.0000 - .485E-03 .000E+00 .000E+00
1297.5 1068.5 5.0000 21.000 - .485E-03 .000E+00 .000E+00
1297.5 1068.5 5.0000 85.000 - .485E-03 .000E+00 .000E+00
1297.5 1068.5 5.0000 341.00 - .485E-03 .000E+00 .000E+00
1297.3 1068.5 5.0000 349.19 - .485E-03 .000E+00 .000E+00

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PARTICLE NO. 2
X Y Z TIME Vx Vy Vz
1297.5 1071.5 5.0000 .00000 - .668E-03 .000E+00 .000E+00
1297.5 1071.5 5.0000 1.0000 - .668E-03 .000E+00 .000E+00
1297.5 1071.5 5.0000 5.0000 - .668E-03 .000E+00 .000E+00
1297.5 1071.5 5.0000 21.000 - .668E-03 .000E+00 .000E+00
1297.5 1071.5 5.0000 85.000 - .668E-03 .000E+00 .000E+00
1297.4 1071.5 5.0000 341.00 - .668E-03 .000E+00 .000E+00
1297.3 1071.5 5.0000 349.19 - .668E-03 .000E+00 .000E+00

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PARTICLE NO. 3
X Y Z TIME Vx Vy Vz
1297.5 1074.5 5.0000 .00000 - .775E-03 .000E+00 .000E+00
1297.5 1074.5 5.0000 1.0000 - .775E-03 .000E+00 .000E+00
1297.5 1074.5 5.0000 5.0000 - .775E-03 .000E+00 .000E+00
1297.5 1074.5 5.0000 21.000 - .775E-03 .000E+00 .000E+00
1297.4 1074.5 5.0000 85.000 - .775E-03 .000E+00 .000E+00
1297.2 1074.5 5.0000 341.00 - .775E-03 .000E+00 .000E+00
1297.2 1074.5 5.0000 349.19 - .775E-03 .000E+00 .000E+00

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PARTICLE NO. 4
X Y Z TIME Vx Vy Vz
1297.5 1077.5 5.0000 .00000 - .668E-03 .000E+00 .000E+00
1297.5 1077.5 5.0000 1.0000 - .668E-03 .000E+00 .000E+00
1297.5 1077.5 5.0000 5.0000 - .668E-03 .000E+00 .000E+00
1297.5 1077.5 5.0000 21.000 - .668E-03 .000E+00 .000E+00
1297.4 1077.5 5.0000 85.000 - .668E-03 .000E+00 .000E+00
1297.3 1077.5 5.0000 341.00 - .668E-03 .000E+00 .000E+00
1297.3 1077.5 5.0000 349.19 - .668E-03 .000E+00 .000E+00

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PARTICLE NO. 5
X Y Z TIME Vx Vy Vz
1297.5 1080.5 5.0000 .00000 - .485E-03 .000E+00 .000E+00
1297.5 1080.5 5.0000 1.0000 - .485E-03 .000E+00 .000E+00
1297.5 1080.5 5.0000 5.0000 - .485E-03 .000E+00 .000E+00
1297.5 1080.5 5.0000 21.000 - .485E-03 .000E+00 .000E+00
1297.5 1080.5 5.0000 85.000 - .485E-03 .000E+00 .000E+00
1297.3 1080.5 5.0000 341.00 - .485E-03 .000E+00 .000E+00
1297.3 1080.5 5.0000 349.19 - .485E-03 .000E+00 .000E+00

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TIME STEP NO. 2
FROM TIME = 349.19 TO 733.30

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HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO. 1
X Y Z TIME Vx Vy Vz
1297.3 1068.5 5.0000 349.19 - .505E-03 .000E+00 .000E+00
1297.3 1068.5 5.0000 350.19 - .505E-03 .000E+00 .000E+00
1297.3 1068.5 5.0000 354.19 - .505E-03 .000E+00 .000E+00
1297.3 1068.5 5.0000 370.19 - .505E-03 .000E+00 .000E+00
1297.3 1068.5 5.0000 434.19 - .505E-03 .000E+00 .000E+00
1297.2 1068.5 5.0000 690.19 - .505E-03 .000E+00 .000E+00
1297.1 1068.5 5.0000 733.30 - .505E-03 .000E+00 .000E+00

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PARTICLE NO. 2
X Y Z TIME Vx Vy Vz
1297.3 1071.5 5.0000 349.19 - .689E-03 .000E+00 .000E+00
1297.3 1071.5 5.0000 350.19 - .689E-03 .000E+00 .000E+00
1297.3 1071.5 5.0000 354.19 - .689E-03 .000E+00 .000E+00
1297.3 1071.5 5.0000 370.19 - .689E-03 .000E+00 .000E+00
1297.2 1071.5 5.0000 434.19 - .689E-03 .000E+00 .000E+00
1297.0 1071.5 5.0000 690.19 - .689E-03 .000E+00 .000E+00
1297.0 1071.5 5.0000 733.30 - .689E-03 .000E+00 .000E+00

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PARTICLE NO. 3
X Y Z TIME Vx Vy Vz
1297.2 1074.5 5.0000 349.19 - .797E-03 .000E+00 .000E+00
1297.2 1074.5 5.0000 350.19 - .797E-03 .000E+00 .000E+00
1297.2 1074.5 5.0000 354.19 - .797E-03 .000E+00 .000E+00
1297.2 1074.5 5.0000 370.19 - .797E-03 .000E+00 .000E+00
1297.2 1074.5 5.0000 434.19 - .797E-03 .000E+00 .000E+00
1297.0 1074.5 5.0000 690.19 - .798E-03 .000E+00 .000E+00
1296.9 1074.5 5.0000 733.30 - .798E-03 .000E+00 .000E+00

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PARTICLE NO. 4
X Y Z TIME Vx Vy Vz
1297.3 1077.5 5.0000 349.19 - .689E-03 .000E+00 .000E+00
1297.3 1077.5 5.0000 350.19 - .689E-03 .000E+00 .000E+00
1297.3 1077.5 5.0000 354.19 - .689E-03 .000E+00 .000E+00
1297.3 1077.5 5.0000 370.19 - .689E-03 .000E+00 .000E+00
1297.2 1077.5 5.0000 434.19 - .689E-03 .000E+00 .000E+00
1297.0 1077.5 5.0000 690.19 - .689E-03 .000E+00 .000E+00
1297.0 1077.5 5.0000 733.30 - .689E-03 .000E+00 .000E+00

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PARTICLE NO. 5
X Y Z TIME Vx Vy Vz

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1297.3	1080.5	5.0000	349.19	-.505E-03	.000E+00	.000E+00
1297.3	1080.5	5.0000	350.19	-.505E-03	.000E+00	.000E+00
1297.3	1080.5	5.0000	354.19	-.505E-03	.000E+00	.000E+00
1297.3	1080.5	5.0000	370.19	-.505E-03	.000E+00	.000E+00
1297.3	1080.5	5.0000	434.19	-.505E-03	.000E+00	.000E+00
1297.2	1080.5	5.0000	690.19	-.505E-03	.000E+00	.000E+00
1297.1	1080.5	5.0000	733.30	-.505E-03	.000E+00	.000E+00

TIME STEP NO. 3

FROM TIME = 733.30 TO 1155.8

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.1	1068.5	5.0000	733.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	734.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	738.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	754.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	818.30	-.508E-03	.000E+00	.000E+00	
1297.0	1068.5	5.0000	1074.3	-.508E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1155.8	-.508E-03	.512E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.0	1071.5	5.0000	733.30	-.692E-03	.000E+00	.000E+00	
1297.0	1071.5	5.0000	734.30	-.692E-03	.000E+00	.000E+00	
1297.0	1071.5	5.0000	738.30	-.692E-03	.406E-04	.000E+00	
1297.0	1071.5	5.0000	754.30	-.692E-03	.406E-04	.000E+00	
1296.9	1071.5	5.0000	818.30	-.692E-03	.406E-04	.000E+00	
1296.8	1071.5	5.0000	1074.3	-.693E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1155.8	-.693E-03	.405E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.9	1074.5	5.0000	733.30	-.801E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	734.30	-.801E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	738.30	-.801E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	754.30	-.802E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	818.30	-.802E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1074.3	-.806E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1155.8	-.806E-03	.000E+00	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.0	1077.5	5.0000	733.30	-.692E-03	.000E+00	.000E+00	
1297.0	1077.5	5.0000	734.30	-.692E-03	.000E+00	.000E+00	
1297.0	1077.5	5.0000	738.30	-.692E-03	-.406E-04	.000E+00	
1297.0	1077.5	5.0000	754.30	-.692E-03	-.406E-04	.000E+00	
1296.9	1077.5	5.0000	818.30	-.692E-03	-.406E-04	.000E+00	
1296.8	1077.5	5.0000	1074.3	-.693E-03	-.405E-04	.000E+00	
1296.7	1077.5	5.0000	1155.8	-.693E-03	-.405E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.1	1080.5	5.0000	733.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	734.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	738.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	754.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	818.30	-.508E-03	.000E+00	.000E+00	
1297.0	1080.5	5.0000	1074.3	-.508E-03	-.512E-04	.000E+00	
1296.9	1080.5	5.0000	1155.8	-.508E-03	-.512E-04	.000E+00	

TIME STEP NO. 4

FROM TIME = 1155.8 TO 1620.6

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.9	1068.5	5.0000	1155.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1156.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1160.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1176.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1240.8	-.508E-03	.512E-04	.000E+00	
1296.7	1068.5	5.0000	1496.8	-.508E-03	.513E-04	.000E+00	
1296.7	1068.5	5.0000	1620.6	-.508E-03	.513E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1071.5	5.0000	1155.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1156.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1160.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1176.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1240.8	-.695E-03	.405E-04	.000E+00	
1296.5	1071.5	5.0000	1496.8	-.696E-03	.404E-04	.000E+00	
1296.4	1071.5	5.0000	1620.6	-.696E-03	.404E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.6	1074.5	5.0000	1155.8	-.808E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1156.8	-.808E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1160.8	-.808E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1176.8	-.808E-03	.000E+00	.000E+00	

1296.5	1074.5	5.0000	1240.8	-.809E-03	.000E+00	.000E+00
1296.3	1074.5	5.0000	1496.8	-.812E-03	.000E+00	.000E+00
1296.2	1074.5	5.0000	1620.6	-.813E-03	.000E+00	.000E+00

PARTICLE NO. 4

X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1077.5	5.0000	1155.8	-.695E-03	-.405E-04	.000E+00
1296.7	1077.5	5.0000	1156.8	-.695E-03	-.405E-04	.000E+00
1296.7	1077.5	5.0000	1160.8	-.695E-03	-.405E-04	.000E+00
1296.7	1077.5	5.0000	1176.8	-.695E-03	-.405E-04	.000E+00
1296.7	1077.5	5.0000	1240.8	-.695E-03	-.405E-04	.000E+00
1296.5	1077.5	5.0000	1496.8	-.696E-03	-.404E-04	.000E+00
1296.4	1077.5	5.0000	1620.6	-.696E-03	-.404E-04	.000E+00

PARTICLE NO. 5

X	Y	Z	TIME	Vx	Vy	Vz
1296.9	1080.5	5.0000	1155.8	-.509E-03	-.512E-04	.000E+00
1296.9	1080.5	5.0000	1156.8	-.509E-03	-.512E-04	.000E+00
1296.9	1080.5	5.0000	1160.8	-.509E-03	-.512E-04	.000E+00
1296.9	1080.5	5.0000	1176.8	-.509E-03	-.512E-04	.000E+00
1296.9	1080.5	5.0000	1240.8	-.508E-03	-.512E-04	.000E+00
1296.7	1080.5	5.0000	1496.8	-.508E-03	-.513E-04	.000E+00
1296.7	1080.5	5.0000	1620.6	-.508E-03	-.513E-04	.000E+00

TIME STEP NO. 5

FROM TIME = 1620.6 TO 2131.9

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

PARTICLE NO. 1

X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1068.5	5.0000	1620.6	-.508E-03	.513E-04	.000E+00
1296.7	1068.5	5.0000	1621.6	-.508E-03	.513E-04	.000E+00
1296.7	1068.5	5.0000	1625.6	-.508E-03	.513E-04	.000E+00
1296.7	1068.5	5.0000	1641.6	-.508E-03	.513E-04	.000E+00
1296.6	1068.5	5.0000	1705.6	-.508E-03	.513E-04	.000E+00
1296.5	1068.6	5.0000	1961.6	-.508E-03	.513E-04	.000E+00
1296.4	1068.6	5.0000	2131.9	-.508E-03	.513E-04	.000E+00

PARTICLE NO. 2

X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1071.5	5.0000	1620.6	-.697E-03	.404E-04	.000E+00
1296.4	1071.5	5.0000	1621.6	-.697E-03	.404E-04	.000E+00
1296.4	1071.5	5.0000	1625.6	-.697E-03	.404E-04	.000E+00
1296.4	1071.5	5.0000	1641.6	-.697E-03	.404E-04	.000E+00
1296.3	1071.5	5.0000	1705.6	-.697E-03	.404E-04	.000E+00
1296.1	1071.6	5.0000	1961.6	-.698E-03	.404E-04	.000E+00
1296.0	1071.6	5.0000	2131.9	-.698E-03	.403E-04	.000E+00

PARTICLE NO. 3

X	Y	Z	TIME	Vx	Vy	Vz
1296.2	1074.5	5.0000	1620.6	-.815E-03	.000E+00	.000E+00
1296.2	1074.5	5.0000	1621.6	-.815E-03	.000E+00	.000E+00
1296.2	1074.5	5.0000	1625.6	-.815E-03	.000E+00	.000E+00
1296.2	1074.5	5.0000	1641.6	-.815E-03	.000E+00	.000E+00
1296.1	1074.5	5.0000	1705.6	-.816E-03	.000E+00	.000E+00
1295.9	1074.5	5.0000	1961.6	-.821E-03	.000E+00	.000E+00
1295.8	1074.5	5.0000	2131.9	-.823E-03	.000E+00	.000E+00

PARTICLE NO. 4

X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1077.5	5.0000	1620.6	-.697E-03	-.404E-04	.000E+00
1296.4	1077.5	5.0000	1621.6	-.697E-03	-.404E-04	.000E+00
1296.4	1077.5	5.0000	1625.6	-.697E-03	-.404E-04	.000E+00
1296.4	1077.5	5.0000	1641.6	-.697E-03	-.404E-04	.000E+00
1296.3	1077.5	5.0000	1705.6	-.697E-03	-.404E-04	.000E+00
1296.1	1077.4	5.0000	1961.6	-.698E-03	-.404E-04	.000E+00
1296.0	1077.4	5.0000	2131.9	-.698E-03	-.403E-04	.000E+00

PARTICLE NO. 5

X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1080.5	5.0000	1620.6	-.508E-03	-.513E-04	.000E+00
1296.7	1080.5	5.0000	1621.6	-.508E-03	-.513E-04	.000E+00
1296.7	1080.5	5.0000	1625.6	-.508E-03	-.513E-04	.000E+00
1296.7	1080.5	5.0000	1641.6	-.508E-03	-.513E-04	.000E+00
1296.6	1080.5	5.0000	1705.6	-.508E-03	-.513E-04	.000E+00
1296.5	1080.4	5.0000	1961.6	-.508E-03	-.513E-04	.000E+00
1296.4	1080.4	5.0000	2131.9	-.508E-03	-.513E-04	.000E+00

TIME STEP NO. 6

FROM TIME = 2131.9 TO 2694.2

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

PARTICLE NO. 1

X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1068.6	5.0000	2131.9	-.508E-03	.514E-04	.000E+00
1296.4	1068.6	5.0000	2132.9	-.508E-03	.514E-04	.000E+00
1296.4	1068.6	5.0000	2136.9	-.508E-03	.514E-04	.000E+00
1296.4	1068.6	5.0000	2152.9	-.508E-03	.514E-04	.000E+00
1296.4	1068.6	5.0000	2216.9	-.508E-03	.514E-04	.000E+00
1296.3	1068.6	5.0000	2472.9	-.507E-03	.514E-04	.000E+00
1296.1	1068.6	5.0000	2694.2	-.507E-03	.514E-04	.000E+00

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.0	1071.6	5.0000	2131.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2132.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2136.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2152.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2216.9	-.699E-03	.844E-04	.000E+00	
1295.8	1071.6	5.0000	2472.9	-.701E-03	.842E-04	.000E+00	
1295.6	1071.6	5.0000	2694.2	-.701E-03	.841E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.8	1074.5	5.0000	2131.9	-.826E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2132.9	-.826E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2136.9	-.826E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2152.9	-.826E-03	.000E+00	.000E+00	
1295.7	1074.5	5.0000	2216.9	-.828E-03	.000E+00	.000E+00	
1295.5	1074.5	5.0000	2472.9	-.836E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2694.2	-.839E-03	.000E+00	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.0	1077.4	5.0000	2131.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2132.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2136.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2152.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2216.9	-.699E-03	-.844E-04	.000E+00	
1295.8	1077.4	5.0000	2472.9	-.701E-03	-.842E-04	.000E+00	
1295.6	1077.4	5.0000	2694.2	-.701E-03	-.841E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1080.4	5.0000	2131.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2132.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2136.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2152.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2216.9	-.508E-03	-.514E-04	.000E+00	
1296.3	1080.4	5.0000	2472.9	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2694.2	-.507E-03	-.514E-04	.000E+00	

TIME STEP NO. 7
 FROM TIME = 2694.2 TO 3312.8

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.1	1068.6	5.0000	2694.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2695.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2699.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2715.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2779.2	-.507E-03	.515E-04	.000E+00	
1296.0	1068.6	5.0000	3035.2	-.507E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3312.8	-.506E-03	.105E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.6	1071.6	5.0000	2694.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2695.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2699.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2715.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2779.2	-.703E-03	.839E-04	.000E+00	
1295.4	1071.6	5.0000	3035.2	-.704E-03	.838E-04	.000E+00	
1295.2	1071.7	5.0000	3312.8	-.705E-03	.836E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.3	1074.5	5.0000	2694.2	-.842E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2695.2	-.843E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2699.2	-.843E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2715.2	-.843E-03	.000E+00	.000E+00	
1295.2	1074.5	5.0000	2779.2	-.845E-03	.000E+00	.000E+00	
1295.0	1074.5	5.0000	3035.2	-.853E-03	.000E+00	.000E+00	
1294.8	1074.5	5.0000	3312.8	-.859E-03	.000E+00	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.6	1077.4	5.0000	2694.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2695.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2699.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2715.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2779.2	-.703E-03	-.839E-04	.000E+00	
1295.4	1077.4	5.0000	3035.2	-.704E-03	-.838E-04	.000E+00	
1295.2	1077.3	5.0000	3312.8	-.705E-03	-.836E-04	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.1	1080.4	5.0000	2694.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2695.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2699.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2715.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2779.2	-.507E-03	-.515E-04	.000E+00	
1296.0	1080.4	5.0000	3035.2	-.507E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3312.8	-.506E-03	-.105E-03	.000E+00	

TIME STEP NO. 8
 FROM TIME = 3312.8 TO 3993.3

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.8	1068.6	5.0000	3312.8	- .506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3313.8	- .506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3317.8	- .506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3333.8	- .506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3397.8	- .506E-03	.105E-03	.000E+00	
1295.7	1068.7	5.0000	3653.8	- .505E-03	.105E-03	.000E+00	
1295.5	1068.7	5.0000	3993.3	- .504E-03	.106E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.2	1071.7	5.0000	3312.8	- .706E-03	.835E-04	.000E+00	
1295.2	1071.7	5.0000	3313.8	- .706E-03	.835E-04	.000E+00	
1295.2	1071.7	5.0000	3317.8	- .706E-03	.835E-04	.000E+00	
1295.2	1071.7	5.0000	3333.8	- .706E-03	.835E-04	.000E+00	
1295.1	1071.7	5.0000	3397.8	- .707E-03	.835E-04	.000E+00	
1295.0	1071.7	5.0000	3653.8	- .709E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	3993.3	- .710E-03	.135E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.8	1074.5	5.0000	3312.8	- .866E-03	.000E+00	.000E+00	
1294.8	1074.5	5.0000	3313.8	- .866E-03	.000E+00	.000E+00	
1294.8	1074.5	5.0000	3317.8	- .866E-03	.000E+00	.000E+00	
1294.8	1074.5	5.0000	3333.8	- .867E-03	.000E+00	.000E+00	
1294.7	1074.5	5.0000	3397.8	- .871E-03	.000E+00	.000E+00	
1294.5	1074.5	5.0000	3653.8	- .884E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	3993.3	- .893E-03	.000E+00	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.2	1077.3	5.0000	3312.8	- .706E-03	-.835E-04	.000E+00	
1295.2	1077.3	5.0000	3313.8	- .706E-03	-.835E-04	.000E+00	
1295.2	1077.3	5.0000	3317.8	- .706E-03	-.835E-04	.000E+00	
1295.2	1077.3	5.0000	3333.8	- .706E-03	-.835E-04	.000E+00	
1295.1	1077.3	5.0000	3397.8	- .707E-03	-.835E-04	.000E+00	
1295.0	1077.3	5.0000	3653.8	- .709E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	3993.3	- .710E-03	-.135E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.8	1080.4	5.0000	3312.8	- .506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3313.8	- .506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3317.8	- .506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3333.8	- .506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3397.8	- .506E-03	-.105E-03	.000E+00	
1295.7	1080.3	5.0000	3653.8	- .505E-03	-.105E-03	.000E+00	
1295.5	1080.3	5.0000	3993.3	- .504E-03	-.106E-03	.000E+00	

TIME STEP NO. 9
FROM TIME = 3993.3 TO 4741.9

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.5	1068.7	5.0000	3993.3	- .504E-03	.106E-03	.000E+00	
1295.5	1068.7	5.0000	3994.3	- .504E-03	.106E-03	.000E+00	
1295.5	1068.7	5.0000	3998.3	- .504E-03	.106E-03	.000E+00	
1295.5	1068.7	5.0000	4014.3	- .504E-03	.106E-03	.000E+00	
1295.4	1068.7	5.0000	4078.3	- .503E-03	.106E-03	.000E+00	
1295.3	1068.7	5.0000	4334.3	- .503E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4741.9	- .502E-03	.106E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1071.7	5.0000	3993.3	- .711E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	3994.3	- .711E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	3998.3	- .712E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	4014.3	- .712E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	4078.3	- .712E-03	.135E-03	.000E+00	
1294.5	1071.8	5.0000	4334.3	- .714E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4741.9	- .716E-03	.134E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1074.5	5.0000	3993.3	- .902E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	3994.3	- .902E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	3998.3	- .902E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	4014.3	- .903E-03	.000E+00	.000E+00	
1294.1	1074.5	5.0000	4078.3	- .906E-03	.000E+00	.000E+00	
1293.9	1074.5	5.0000	4334.3	- .924E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4741.9	- .942E-03	.000E+00	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1077.3	5.0000	3993.3	- .711E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	3994.3	- .711E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	3998.3	- .712E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	4014.3	- .712E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	4078.3	- .712E-03	-.135E-03	.000E+00	
1294.5	1077.2	5.0000	4334.3	- .714E-03	-.134E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1077.2	5.0000	4741.9	-.716E-03	-.134E-03	.000E+00	
1295.5	1080.3	5.0000	3993.3	-.504E-03	-.106E-03	.000E+00	
1295.5	1080.3	5.0000	3994.3	-.504E-03	-.106E-03	.000E+00	
1295.5	1080.3	5.0000	3998.3	-.504E-03	-.106E-03	.000E+00	
1295.5	1080.3	5.0000	4014.3	-.504E-03	-.106E-03	.000E+00	
1295.4	1080.3	5.0000	4078.3	-.503E-03	-.106E-03	.000E+00	
1295.3	1080.3	5.0000	4334.3	-.503E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4741.9	-.502E-03	-.106E-03	.000E+00	

TIME STEP NO. 10

FROM TIME = 4741.9 TO 5565.2

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.1	1068.8	5.0000	4741.9	-.501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4742.9	-.501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4746.9	-.501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4762.9	-.501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4826.9	-.501E-03	.106E-03	.000E+00	
1294.9	1068.8	5.0000	5082.9	-.500E-03	.165E-03	.000E+00	
1294.7	1068.9	5.0000	5565.2	-.499E-03	.165E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1071.8	5.0000	4741.9	-.718E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4742.9	-.718E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4746.9	-.718E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4762.9	-.718E-03	.134E-03	.000E+00	
1294.1	1071.8	5.0000	4826.9	-.719E-03	.133E-03	.000E+00	
1293.9	1071.9	5.0000	5082.9	-.721E-03	.200E-03	.000E+00	
1293.6	1072.0	5.0000	5565.2	-.723E-03	.199E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.5	1074.5	5.0000	4741.9	-.960E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4742.9	-.960E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4746.9	-.961E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4762.9	-.962E-03	.000E+00	.000E+00	
1293.4	1074.5	5.0000	4826.9	-.968E-03	.000E+00	.000E+00	
1293.2	1074.5	5.0000	5082.9	-.991E-03	.000E+00	.000E+00	
1292.7	1074.5	5.0000	5565.2	-.102E-02	.000E+00	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1077.2	5.0000	4741.9	-.718E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4742.9	-.718E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4746.9	-.718E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4762.9	-.718E-03	-.134E-03	.000E+00	
1294.1	1077.2	5.0000	4826.9	-.719E-03	-.133E-03	.000E+00	
1293.9	1077.1	5.0000	5082.9	-.721E-03	-.200E-03	.000E+00	
1293.6	1077.0	5.0000	5565.2	-.723E-03	-.199E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.1	1080.2	5.0000	4741.9	-.501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4742.9	-.501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4746.9	-.501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4762.9	-.501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4826.9	-.501E-03	-.106E-03	.000E+00	
1294.9	1080.2	5.0000	5082.9	-.500E-03	-.165E-03	.000E+00	
1294.7	1080.1	5.0000	5565.2	-.499E-03	-.165E-03	.000E+00	

TIME STEP NO. 11

FROM TIME = 5565.2 TO 6470.9

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1068.9	5.0000	5565.2	-.497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5566.2	-.497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5570.2	-.497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5586.2	-.497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5650.2	-.497E-03	.166E-03	.000E+00	
1294.5	1069.0	5.0000	5906.2	-.496E-03	.166E-03	.000E+00	
1294.2	1069.1	5.0000	6470.9	-.716E-03	.167E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.6	1072.0	5.0000	5565.2	-.725E-03	.199E-03	.000E+00	
1293.6	1072.0	5.0000	5566.2	-.725E-03	.199E-03	.000E+00	
1293.6	1072.0	5.0000	5570.2	-.725E-03	.199E-03	.000E+00	
1293.6	1072.0	5.0000	5586.2	-.725E-03	.199E-03	.000E+00	
1293.5	1072.0	5.0000	5650.2	-.725E-03	.199E-03	.000E+00	
1293.3	1072.0	5.0000	5906.2	-.941E-03	.195E-03	.000E+00	
1292.7	1072.2	5.0000	6470.9	-.961E-03	.191E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
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1292.7	1074.5	5.0000	5565.2	-.106E-02	.000E+00	.000E+00
1292.7	1074.5	5.0000	5566.2	-.106E-02	.000E+00	.000E+00
1292.7	1074.5	5.0000	5570.2	-.106E-02	.000E+00	.000E+00
1292.6	1074.5	5.0000	5586.2	-.106E-02	.000E+00	.000E+00
1292.6	1074.5	5.0000	5650.2	-.107E-02	.000E+00	.000E+00
1292.3	1074.5	5.0000	5906.2	-.111E-02	.000E+00	.000E+00
1291.6	1074.5	5.0000	6470.9	-.116E-02	.318E-08	.000E+00

PARTICLE NO. 4

X	Y	Z	TIME	Vx	Vy	Vz
1293.6	1077.0	5.0000	5565.2	-.725E-03	-.199E-03	.000E+00
1293.6	1077.0	5.0000	5566.2	-.725E-03	-.199E-03	.000E+00
1293.6	1077.0	5.0000	5570.2	-.725E-03	-.199E-03	.000E+00
1293.6	1077.0	5.0000	5586.2	-.725E-03	-.199E-03	.000E+00
1293.5	1077.0	5.0000	5650.2	-.725E-03	-.199E-03	.000E+00
1293.3	1077.0	5.0000	5906.2	-.941E-03	-.195E-03	.000E+00
1292.7	1076.8	5.0000	6470.9	-.961E-03	-.191E-03	.000E+00

PARTICLE NO. 5

X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1080.1	5.0000	5565.2	-.497E-03	-.166E-03	.000E+00
1294.7	1080.1	5.0000	5566.2	-.497E-03	-.166E-03	.000E+00
1294.7	1080.1	5.0000	5570.2	-.497E-03	-.166E-03	.000E+00
1294.7	1080.1	5.0000	5586.2	-.497E-03	-.166E-03	.000E+00
1294.7	1080.1	5.0000	5650.2	-.497E-03	-.166E-03	.000E+00
1294.5	1080.0	5.0000	5906.2	-.496E-03	-.166E-03	.000E+00
1294.2	1079.9	5.0000	6470.9	-.716E-03	-.167E-03	.000E+00

TIME STEP NO. 12
FROM TIME = 6470.9 TO 7467.2

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

PARTICLE NO. 1

X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1069.1	5.0000	6470.9	-.718E-03	.166E-03	.000E+00
1294.2	1069.1	5.0000	6471.9	-.718E-03	.166E-03	.000E+00
1294.2	1069.1	5.0000	6475.9	-.718E-03	.166E-03	.000E+00
1294.2	1069.1	5.0000	6491.9	-.718E-03	.166E-03	.000E+00
1294.1	1069.1	5.0000	6555.9	-.719E-03	.166E-03	.000E+00
1293.9	1069.1	5.0000	6811.9	-.721E-03	.231E-03	.000E+00
1293.5	1069.3	5.0000	7467.2	-.724E-03	.230E-03	.000E+00

PARTICLE NO. 2

X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1072.2	5.0000	6470.9	-.990E-03	.272E-03	.000E+00
1292.7	1072.2	5.0000	6471.9	-.990E-03	.272E-03	.000E+00
1292.7	1072.2	5.0000	6475.9	-.991E-03	.272E-03	.000E+00
1292.7	1072.2	5.0000	6491.9	-.992E-03	.272E-03	.000E+00
1292.7	1072.2	5.0000	6555.9	-.999E-03	.270E-03	.000E+00
1292.4	1072.3	5.0000	6811.9	-.103E-02	.263E-03	.000E+00
1291.7	1072.5	5.0000	7467.2	-.106E-02	.253E-03	.000E+00

PARTICLE NO. 3

X	Y	Z	TIME	Vx	Vy	Vz
1291.6	1074.5	5.0000	6470.9	-.126E-02	.318E-08	.000E+00
1291.6	1074.5	5.0000	6471.9	-.126E-02	.318E-08	.000E+00
1291.6	1074.5	5.0000	6475.9	-.126E-02	.318E-08	.000E+00
1291.6	1074.5	5.0000	6491.9	-.126E-02	.318E-08	.000E+00
1291.5	1074.5	5.0000	6555.9	-.128E-02	.318E-08	.000E+00
1291.2	1074.5	5.0000	6811.9	-.138E-02	.318E-08	.000E+00
1290.1	1074.5	5.0000	7467.2	-.158E-02	.300E+00	.000E+00

PARTICLE NO. 4

X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1076.8	5.0000	6470.9	-.990E-03	-.272E-03	.000E+00
1292.7	1076.8	5.0000	6471.9	-.990E-03	-.272E-03	.000E+00
1292.7	1076.8	5.0000	6475.9	-.991E-03	-.272E-03	.000E+00
1292.7	1076.8	5.0000	6491.9	-.993E-03	-.272E-03	.000E+00
1292.7	1076.8	5.0000	6555.9	-.999E-03	-.270E-03	.000E+00
1292.4	1076.7	5.0000	6811.9	-.103E-02	-.263E-03	.000E+00
1291.7	1076.5	5.0000	7467.2	-.106E-02	-.253E-03	.000E+00

PARTICLE NO. 5

X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1079.9	5.0000	6470.9	-.718E-03	-.166E-03	.000E+00
1294.2	1079.9	5.0000	6471.9	-.718E-03	-.166E-03	.000E+00
1294.2	1079.9	5.0000	6475.9	-.718E-03	-.166E-03	.000E+00
1294.2	1079.9	5.0000	6491.9	-.718E-03	-.166E-03	.000E+00
1294.1	1079.9	5.0000	6555.9	-.719E-03	-.166E-03	.000E+00
1293.9	1079.9	5.0000	6811.9	-.721E-03	-.231E-03	.000E+00
1293.5	1079.7	5.0000	7467.2	-.724E-03	-.230E-03	.000E+00

TIME STEP NO. 13
FROM TIME = 7467.2 TO 8563.1

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

PARTICLE NO. 1

X	Y	Z	TIME	Vx	Vy	Vz
1293.5	1069.3	5.0000	7467.2	-.726E-03	.229E-03	.000E+00
1293.5	1069.3	5.0000	7468.2	-.726E-03	.229E-03	.000E+00
1293.5	1069.3	5.0000	7472.2	-.726E-03	.229E-03	.000E+00
1293.4	1069.3	5.0000	7488.2	-.726E-03	.229E-03	.000E+00

1293.4	1069.3	5.0000	7552.2	-.727E-03	.229E-03	.000E+00
1293.2	1069.4	5.0000	7808.2	-.729E-03	.229E-03	.000E+00
1292.7	1069.6	5.0000	8563.1	-.732E-03	.304E-03	.000E+00

PARTICLE NO. 2						
X	Y	Z	TIME	Vx	Vy	Vz
1291.7	1072.5	5.0000	7467.2	-.111E-02	.357E-03	.000E+00
1291.7	1072.5	5.0000	7468.2	-.111E-02	.357E-03	.000E+00
1291.7	1072.5	5.0000	7472.2	-.111E-02	.357E-03	.000E+00
1291.7	1072.5	5.0000	7488.2	-.112E-02	.356E-03	.000E+00
1291.6	1072.5	5.0000	7552.2	-.113E-02	.353E-03	.000E+00
1291.3	1072.6	5.0000	7808.2	-.117E-02	.340E-03	.000E+00
1290.4	1072.9	5.0000	8563.1	-.124E-02	.496E-03	.000E+00

PARTICLE NO. 3						
X	Y	Z	TIME	Vx	Vy	Vz
1290.1	1074.5	5.0000	7467.2	-.189E-02	.317E-08	.000E+00
1290.1	1074.5	5.0000	7468.2	-.190E-02	.317E-08	.000E+00
1290.1	1074.5	5.0000	7472.2	-.190E-02	.317E-08	.000E+00
1290.1	1074.5	5.0000	7488.2	-.192E-02	.317E-08	.000E+00
1290.0	1074.5	5.0000	7552.2	-.200E-02	.000E+00	.000E+00
1289.4	1074.5	5.0000	7808.2	-.281E-02	.000E+00	.000E+00
1288.2	1074.5	5.0000	8563.1	-.698E-02	.320E-08	.000E+00

PARTICLE NO. 4						
X	Y	Z	TIME	Vx	Vy	Vz
1291.7	1076.5	5.0000	7467.2	-.111E-02	-.357E-03	.000E+00
1291.7	1076.5	5.0000	7468.2	-.111E-02	-.357E-03	.000E+00
1291.7	1076.5	5.0000	7472.2	-.111E-02	-.357E-03	.000E+00
1291.7	1076.5	5.0000	7488.2	-.112E-02	-.356E-03	.000E+00
1291.6	1076.5	5.0000	7552.2	-.113E-02	-.353E-03	.000E+00
1291.3	1076.4	5.0000	7808.2	-.117E-02	-.340E-03	.000E+00
1290.4	1076.1	5.0000	8563.1	-.124E-02	-.496E-03	.000E+00

PARTICLE NO. 5						
X	Y	Z	TIME	Vx	Vy	Vz
1293.5	1079.7	5.0000	7467.2	-.726E-03	-.229E-03	.000E+00
1293.5	1079.7	5.0000	7468.2	-.726E-03	-.229E-03	.000E+00
1293.5	1079.7	5.0000	7472.2	-.726E-03	-.229E-03	.000E+00
1293.4	1079.7	5.0000	7488.2	-.726E-03	-.229E-03	.000E+00
1293.4	1079.7	5.0000	7552.2	-.727E-03	-.229E-03	.000E+00
1293.2	1079.6	5.0000	7808.2	-.729E-03	-.229E-03	.000E+00
1292.7	1079.4	5.0000	8563.1	-.732E-03	-.304E-03	.000E+00

TIME STEP NO. 14
 FROM TIME = 8563.1 TO 9768.7

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO. 1						
X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1069.6	5.0000	8563.1	-.733E-03	.304E-03	.000E+00
1292.7	1069.6	5.0000	8564.1	-.733E-03	.304E-03	.000E+00
1292.7	1069.6	5.0000	8568.1	-.733E-03	.304E-03	.000E+00
1292.6	1069.6	5.0000	8584.1	-.733E-03	.304E-03	.000E+00
1292.6	1069.6	5.0000	8648.1	-.734E-03	.304E-03	.000E+00
1292.4	1069.7	5.0000	8904.1	-.735E-03	.303E-03	.000E+00
1291.8	1070.0	5.0000	9768.7	-.736E-03	.302E-03	.000E+00

PARTICLE NO. 2						
X	Y	Z	TIME	Vx	Vy	Vz
1290.4	1072.9	5.0000	8563.1	-.132E-02	.465E-03	.000E+00
1290.4	1072.9	5.0000	8564.1	-.132E-02	.465E-03	.000E+00
1290.4	1072.9	5.0000	8568.1	-.133E-02	.465E-03	.000E+00
1290.3	1072.9	5.0000	8584.1	-.133E-02	.464E-03	.000E+00
1290.3	1072.9	5.0000	8648.1	-.134E-02	.458E-03	.000E+00
1289.9	1073.1	5.0000	8904.1	-.140E-02	.777E-03	.000E+00
1288.9	1073.7	5.0000	9621.9	-.147E-02	.176E-02	.000E+00
1288.7	1073.9	5.0000	9768.7	-.144E-02	.179E-02	.000E+00

PARTICLE NO. 3						
X	Y	Z	TIME	Vx	Vy	Vz
1288.2	1074.5	5.0000	8563.1	-.634E-02	.000E+00	.000E+00
1288.2	1074.5	5.0000	8564.1	-.636E-02	.000E+00	.000E+00
1288.1	1074.5	5.0000	8568.1	-.646E-02	.000E+00	.000E+00
1288.0	1074.5	5.0000	8584.1	-.685E-02	.000E+00	.000E+00
1287.7	1074.5	5.0000	8648.1	-.320E-02	.000E+00	.000E+00

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

PARTICLE NO. 4						
X	Y	Z	TIME	Vx	Vy	Vz
1290.4	1076.1	5.0000	8563.1	-.132E-02	-.465E-03	.000E+00
1290.4	1076.1	5.0000	8564.1	-.132E-02	-.465E-03	.000E+00
1290.4	1076.1	5.0000	8568.1	-.133E-02	-.465E-03	.000E+00
1290.3	1076.1	5.0000	8584.1	-.133E-02	-.464E-03	.000E+00
1290.3	1076.1	5.0000	8648.1	-.134E-02	-.458E-03	.000E+00
1289.9	1075.9	5.0000	8904.1	-.140E-02	-.777E-03	.000E+00
1288.9	1075.3	5.0000	9621.9	-.147E-02	-.176E-02	.000E+00
1288.7	1075.1	5.0000	9768.7	-.144E-02	-.179E-02	.000E+00

PARTICLE NO. 5						
X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1079.4	5.0000	8563.1	-.733E-03	-.304E-03	.000E+00
1292.7	1079.4	5.0000	8564.1	-.733E-03	-.304E-03	.000E+00
1292.7	1079.4	5.0000	8568.1	-.733E-03	-.304E-03	.000E+00
1292.6	1079.4	5.0000	8584.1	-.733E-03	-.304E-03	.000E+00
1292.6	1079.4	5.0000	8648.1	-.734E-03	-.304E-03	.000E+00
1292.4	1079.3	5.0000	8904.1	-.735E-03	-.303E-03	.000E+00
1291.8	1079.0	5.0000	9768.7	-.736E-03	-.302E-03	.000E+00

TIME STEP NO. 15

FROM TIME = 9768.7 TO 11095.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO.	1						
X	Y	Z	TIME	Vx	Vy	Vz	
1291.8	1070.0	5.0000	9768.7	-.734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9769.7	-.734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9773.7	-.734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9789.7	-.734E-03	.401E-03	.000E+00	
1291.7	1070.0	5.0000	9853.7	-.733E-03	.401E-03	.000E+00	
1291.5	1070.1	5.0000	10110.	-.731E-03	.402E-03	.000E+00	
1290.8	1070.6	5.0000	11095.	-.727E-03	.405E-03	.000E+00	

PARTICLE NO.	2						
X	Y	Z	TIME	Vx	Vy	Vz	
1288.7	1073.9	5.0000	9768.7	-.141E-02	.183E-02	.000E+00	
1288.7	1073.9	5.0000	9769.7	-.141E-02	.183E-02	.000E+00	
1288.6	1073.9	5.0000	9773.7	-.141E-02	.183E-02	.000E+00	
1288.6	1074.0	5.0000	9789.7	-.141E-02	.184E-02	.000E+00	
1288.4	1074.1	5.0000	9853.7	-.554E-02	.161E-02	.000E+00	
1287.8	1074.3	5.0000	9958.8	-.401E-02	.235E-02	.000E+00	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

PARTICLE NO.	3						
X	Y	Z	TIME	Vx	Vy	Vz	
PARTICLE HAS ALREADY BEEN REMOVED							

PARTICLE NO.	4						
X	Y	Z	TIME	Vx	Vy	Vz	
1288.7	1075.1	5.0000	9768.7	-.141E-02	-.183E-02	.000E+00	
1288.7	1075.1	5.0000	9769.7	-.141E-02	-.183E-02	.000E+00	
1288.6	1075.1	5.0000	9773.7	-.141E-02	-.183E-02	.000E+00	
1288.6	1075.0	5.0000	9789.7	-.141E-02	-.184E-02	.000E+00	
1288.4	1074.9	5.0000	9853.7	-.554E-02	-.161E-02	.000E+00	
1287.8	1074.7	5.0000	9958.8	-.401E-02	-.235E-02	.000E+00	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

PARTICLE NO.	5						
X	Y	Z	TIME	Vx	Vy	Vz	
1291.8	1079.0	5.0000	9768.7	-.734E-03	-.401E-03	.000E+00	
1291.8	1079.0	5.0000	9769.7	-.734E-03	-.401E-03	.000E+00	
1291.8	1079.0	5.0000	9773.7	-.734E-03	-.401E-03	.000E+00	
1291.8	1079.0	5.0000	9789.7	-.734E-03	-.401E-03	.000E+00	
1291.7	1079.0	5.0000	9853.7	-.733E-03	-.401E-03	.000E+00	
1291.5	1078.9	5.0000	10110.	-.731E-03	-.402E-03	.000E+00	
1290.8	1078.4	5.0000	11095.	-.727E-03	-.405E-03	.000E+00	

TIME STEP NO. 16

FROM TIME = 11095. TO 12553.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO.	1						
X	Y	Z	TIME	Vx	Vy	Vz	
1290.8	1070.6	5.0000	11095.	-.716E-03	.553E-03	.000E+00	
1290.8	1070.6	5.0000	11096.	-.716E-03	.553E-03	.000E+00	
1290.8	1070.6	5.0000	11100.	-.716E-03	.553E-03	.000E+00	
1290.8	1070.6	5.0000	11116.	-.715E-03	.553E-03	.000E+00	
1290.7	1070.6	5.0000	11180.	-.713E-03	.555E-03	.000E+00	
1290.6	1070.7	5.0000	11436.	-.704E-03	.562E-03	.000E+00	
1289.9	1071.4	5.0000	12460.	-.662E-03	.834E-03	.000E+00	
1289.8	1071.4	5.0000	12553.	-.658E-03	.839E-03	.000E+00	

PARTICLE NO.	2						
X	Y	Z	TIME	Vx	Vy	Vz	
PARTICLE HAS ALREADY BEEN REMOVED							

PARTICLE NO.	3						
X	Y	Z	TIME	Vx	Vy	Vz	
PARTICLE HAS ALREADY BEEN REMOVED							

PARTICLE NO.	4						
X	Y	Z	TIME	Vx	Vy	Vz	
PARTICLE HAS ALREADY BEEN REMOVED							

PARTICLE NO.	5						
X	Y	Z	TIME	Vx	Vy	Vz	
1290.8	1078.4	5.0000	11095.	-.716E-03	-.553E-03	.000E+00	
1290.8	1078.4	5.0000	11096.	-.716E-03	-.553E-03	.000E+00	
1290.8	1078.4	5.0000	11100.	-.716E-03	-.553E-03	.000E+00	
1290.8	1078.4	5.0000	11116.	-.715E-03	-.553E-03	.000E+00	
1290.7	1078.4	5.0000	11180.	-.713E-03	-.555E-03	.000E+00	
1290.6	1078.3	5.0000	11436.	-.704E-03	-.562E-03	.000E+00	
1289.9	1077.6	5.0000	12460.	-.662E-03	.834E-03	.000E+00	
1289.8	1077.6	5.0000	12553.	-.658E-03	.839E-03	.000E+00	

TIME STEP NO. 17

FROM TIME = 12553. TO 14158.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO. 1

X	Y	Z	TIME	Vx	Vy	Vz
1289.8	1071.4	5.0000	12553.	-.655E-03	.843E-03	.000E+00
1289.8	1071.4	5.0000	12554.	-.655E-03	.843E-03	.000E+00
1289.8	1071.4	5.0000	12558.	-.655E-03	.843E-03	.000E+00
1289.8	1071.5	5.0000	12574.	-.653E-03	.845E-03	.000E+00
1289.7	1071.5	5.0000	12638.	-.649E-03	.851E-03	.000E+00
1289.6	1071.7	5.0000	12894.	-.630E-03	.876E-03	.000E+00
1288.5	1072.9	5.0000	13918.	-.136E-02	.153E-02	.000E+00
1288.1	1073.3	5.0000	14158.	-.131E-02	.159E-02	.000E+00

PARTICLE NO. 2

X Y Z TIME Vx Vy Vz

PARTICLE HAS ALREADY BEEN REMOVED

PARTICLE NO. 3

X Y Z TIME Vx Vy Vz

PARTICLE HAS ALREADY BEEN REMOVED

PARTICLE NO. 4

X Y Z TIME Vx Vy Vz

PARTICLE HAS ALREADY BEEN REMOVED

PARTICLE NO. 5

X	Y	Z	TIME	Vx	Vy	Vz
1289.8	1077.6	5.0000	12553.	-.655E-03	-.843E-03	.000E+00
1289.8	1077.6	5.0000	12554.	-.655E-03	-.843E-03	.000E+00
1289.8	1077.6	5.0000	12558.	-.655E-03	-.843E-03	.000E+00
1289.8	1077.5	5.0000	12574.	-.653E-03	-.845E-03	.000E+00
1289.7	1077.5	5.0000	12638.	-.649E-03	-.851E-03	.000E+00
1289.6	1077.3	5.0000	12894.	-.630E-03	-.876E-03	.000E+00
1288.5	1076.1	5.0000	13918.	-.136E-02	-.153E-02	.000E+00
1288.1	1075.7	5.0000	14158.	-.131E-02	-.159E-02	.000E+00

TIME STEP NO. 18

FROM TIME = 14158. TO 15923.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO. 1

X	Y	Z	TIME	Vx	Vy	Vz
1288.1	1073.3	5.0000	14158.	-.127E-02	.164E-02	.000E+00
1288.1	1073.3	5.0000	14159.	-.127E-02	.164E-02	.000E+00
1288.1	1073.3	5.0000	14163.	-.127E-02	.164E-02	.000E+00
1288.1	1073.3	5.0000	14179.	-.126E-02	.165E-02	.000E+00
1288.0	1073.4	5.0000	14243.	-.124E-02	.168E-02	.000E+00
1287.5	1074.4	5.0000	14499.	-.571E-03	.164E-02	.000E+00

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

PARTICLE NO. 2

X Y Z TIME Vx Vy Vz

PARTICLE HAS ALREADY BEEN REMOVED

PARTICLE NO. 3

X Y Z TIME Vx Vy Vz

PARTICLE HAS ALREADY BEEN REMOVED

PARTICLE NO. 4

X Y Z TIME Vx Vy Vz

PARTICLE HAS ALREADY BEEN REMOVED

PARTICLE NO. 5

X	Y	Z	TIME	Vx	Vy	Vz
1288.1	1075.7	5.0000	14158.	-.127E-02	-.164E-02	.000E+00
1288.1	1075.7	5.0000	14159.	-.127E-02	-.164E-02	.000E+00
1288.1	1075.7	5.0000	14163.	-.127E-02	-.164E-02	.000E+00
1288.1	1075.7	5.0000	14179.	-.126E-02	-.165E-02	.000E+00
1288.0	1075.6	5.0000	14243.	-.124E-02	-.168E-02	.000E+00
1287.5	1074.6	5.0000	14499.	-.571E-03	-.164E-02	.000E+00

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

>>ALL PARTICLES HAVE ALREADY BEEN REMOVED

Output for example 2 from RFP implementation of PATH3D

```

*****
+
+           P A T H 3 D
+   A Ground-Water Path and Travel-Time Simulator
+   (V. 3.20)
+
*****

```

```

Enter Name for Particle Tracking Input File:
Enter Name of Input Head File:
Enter U if the head file is UNFORMATTED:
Otherwise, enter format of the head file:
Print out heads for checking? (Enter Y or N)
Enter Name for BAS Package Input File:
EXAMPLE 2:
2-D TRANSIENT PLANAR VIEW
FLOW MODEL CONSISTS OF      1 LAYERS   31 ROWS   31 COLUMNS
NUMBER OF STRESS PERIOD(S) IN SIMULATION =      1
TIME UNIT USED IN THE MODEL IS MINUTES
PACKAGE: BCF WEL DRN RIV EVT GHB RCH STR
UNIT: 11 12 0 0 0 0 0 0 0
Enter Name for BCF Package Input File:
FLOW FIELD IS TRANSIENT (ISS=0)
WETTING CAPABILITY IS NOT ACTIVE
HEAD AT CELLS THAT CONVERT TO DRY= .000000E+00
Enter Name for WEL Package Input File:
MAXIMUM NUMBER OF WELLS =      1
MAXIMUM NUMBER OF PARTICLES ALLOWED =      5
FILE (P3DPLT.DAT) SAVED IN UNIT 4 FOR PLOTTING PATH LINES
INITIAL PARTICLE POSITIONS ARE ENTERED IN X, Y, Z COORDINATES
PARTICLE REMOVAL OPTION (1) IS SELECTED
11754 ELEMENTS OF THE Y ARRAY USED OUT OF      800000

```

BOUNDARY ARRAY (IBOUND) FOR LAYER 1 READ ON UNIT 1 USING FORMAT: *(31I2)

HEAD AT INACTIVE CELLS = 999.0000

STARTING HYDRAULIC HEADS = 20.00000 FOR LAYER 1

LAYER NUMBER AQUIFER TYPE

1 0

ANISOTROPY RATIO (Ky/Kx) = 1.000000

WIDTH ALONG ROWS (DELR) READ ON UNIT 11 USING FORMAT: *(20f4.0)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	200.00	200.00	200.00	200.00	200.00	100.00	50.00	40.00	30.00	20.00	10.00	8.00	7.00	6.00	5.00
	4.00	3.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1.00														

WIDTH ALONG COL. (DELC) READ ON UNIT 11 USING FORMAT: *(20f4.0)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	200.00	200.00	200.00	200.00	100.00	80.00	40.00	20.00	10.00	5.00	5.00	5.00	4.00	3.00	2.00
	1.00	2.00	3.00	4.00	5.00	5.00	5.00	10.00	20.00	40.00	80.00	100.00	200.00	200.00	200.00
	200.00														

SC1 (NOT USED BY PATH3D) = .2000000E-02 FOR LAYER 1
TRANS. ALONG ROWS (Tx) = .2000000E-01 FOR LAYER 1
TOP ELEV. OF 1ST LAYER = 10.00000 FOR LAYER 1
CELL THICKNESS (DZ) = 10.00000 FOR LAYER 1
POROSITY*RETARD. FACTOR = .4000000 FOR LAYER 1

TRACKING START TIME (TIME1) = .0000000E+00
TRACKING END TIME (TIME2) = 1000000.
ERROR CRITERION (EPS) = .1000000E-02
INITIAL TRACKING STEPSIZE = 1.000000
MAXIMUM TRACKING STEPS ALLOWED = 100
INTERVAL FOR SAVING INTERMEDIATE RESULTS = 1
OPTION FOR PRINTING INTERMEDIATE RESULTS = 2

PARTICLE STARTING POSITIONS

PARTICLE NO.	X	Y	Z
1	1297.5	1068.5	5.0000
2	1297.5	1071.5	5.0000
3	1297.5	1074.5	5.0000
4	1297.5	1077.5	5.0000
5	1297.5	1080.5	5.0000

STRESS PERIOD NO. 1

STRESS PERIOD NO. 1

LENGTH OF THIS STRESS PERIOD = 20000.00
NUMBER OF TIME STEPS FOR HEAD SOLUTION = 20
TIME STEP MULTIPLIER = 1.100000

NUMBER OF WELLS IN CURRENT STRESS PERIOD = 1
WELL NO. LAYER ROW COLUMN Q
1 1 16 21 -.1000000

TIME STEP NO. 1

TIME STEP NO. 1

FROM TIME = .00000E+00 TO 349.19

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.5	1068.5	5.0000	.00000E+00	- .485E-03	.000E+00	.000E+00	
1297.5	1068.5	5.0000	1.0000	- .485E-03	.000E+00	.000E+00	
1297.5	1068.5	5.0000	5.0000	- .485E-03	.000E+00	.000E+00	
1297.5	1068.5	5.0000	21.000	- .485E-03	.000E+00	.000E+00	
1297.5	1068.5	5.0000	85.000	- .485E-03	.000E+00	.000E+00	
1297.3	1068.5	5.0000	341.00	- .485E-03	.000E+00	.000E+00	
1297.3	1068.5	5.0000	349.19	- .485E-03	.000E+00	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.5	1071.5	5.0000	.00000E+00	- .668E-03	.000E+00	.000E+00	
1297.5	1071.5	5.0000	1.0000	- .668E-03	.000E+00	.000E+00	
1297.5	1071.5	5.0000	5.0000	- .668E-03	.000E+00	.000E+00	
1297.5	1071.5	5.0000	21.000	- .668E-03	.000E+00	.000E+00	
1297.4	1071.5	5.0000	85.000	- .668E-03	.000E+00	.000E+00	
1297.3	1071.5	5.0000	341.00	- .668E-03	.000E+00	.000E+00	
1297.3	1071.5	5.0000	349.19	- .668E-03	.000E+00	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.5	1074.5	5.0000	.00000E+00	- .775E-03	.000E+00	.000E+00	
1297.5	1074.5	5.0000	1.0000	- .775E-03	.000E+00	.000E+00	
1297.5	1074.5	5.0000	5.0000	- .775E-03	.000E+00	.000E+00	
1297.5	1074.5	5.0000	21.000	- .775E-03	.000E+00	.000E+00	
1297.4	1074.5	5.0000	85.000	- .775E-03	.000E+00	.000E+00	
1297.2	1074.5	5.0000	341.00	- .775E-03	.000E+00	.000E+00	
1297.2	1074.5	5.0000	349.19	- .775E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.5	1077.5	5.0000	.00000E+00	- .668E-03	.000E+00	.000E+00	
1297.5	1077.5	5.0000	1.0000	- .668E-03	.000E+00	.000E+00	
1297.5	1077.5	5.0000	5.0000	- .668E-03	.000E+00	.000E+00	
1297.5	1077.5	5.0000	21.000	- .668E-03	.000E+00	.000E+00	
1297.4	1077.5	5.0000	85.000	- .668E-03	.000E+00	.000E+00	
1297.3	1077.5	5.0000	341.00	- .668E-03	.000E+00	.000E+00	
1297.3	1077.5	5.0000	349.19	- .668E-03	.000E+00	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.5	1080.5	5.0000	.00000E+00	- .485E-03	.000E+00	.000E+00	
1297.5	1080.5	5.0000	1.0000	- .485E-03	.000E+00	.000E+00	
1297.5	1080.5	5.0000	5.0000	- .485E-03	.000E+00	.000E+00	
1297.5	1080.5	5.0000	21.000	- .485E-03	.000E+00	.000E+00	
1297.5	1080.5	5.0000	85.000	- .485E-03	.000E+00	.000E+00	
1297.3	1080.5	5.0000	341.00	- .485E-03	.000E+00	.000E+00	
1297.3	1080.5	5.0000	349.19	- .485E-03	.000E+00	.000E+00	

TIME STEP NO. 2

TIME STEP NO. 2

FROM TIME = 349.19 TO 733.30

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.3	1068.5	5.0000	349.19	- .505E-03	.000E+00	.000E+00	
1297.3	1068.5	5.0000	350.19	- .505E-03	.000E+00	.000E+00	
1297.3	1068.5	5.0000	354.19	- .505E-03	.000E+00	.000E+00	
1297.3	1068.5	5.0000	370.19	- .505E-03	.000E+00	.000E+00	
1297.3	1068.5	5.0000	434.19	- .505E-03	.000E+00	.000E+00	
1297.2	1068.5	5.0000	690.19	- .505E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	733.30	- .505E-03	.000E+00	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.3	1071.5	5.0000	349.19	- .689E-03	.000E+00	.000E+00	
1297.3	1071.5	5.0000	350.19	- .689E-03	.000E+00	.000E+00	
1297.3	1071.5	5.0000	354.19	- .689E-03	.000E+00	.000E+00	
1297.3	1071.5	5.0000	370.19	- .689E-03	.000E+00	.000E+00	
1297.2	1071.5	5.0000	434.19	- .689E-03	.000E+00	.000E+00	

1297.0	1071.5	5.0000	690.19	-.689E-03	.000E+00	.000E+00
1297.0	1071.5	5.0000	733.30	-.689E-03	.000E+00	.000E+00

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.2	1074.5	5.0000	349.19	-.797E-03	.000E+00	.000E+00	
1297.2	1074.5	5.0000	350.19	-.797E-03	.000E+00	.000E+00	
1297.2	1074.5	5.0000	354.19	-.797E-03	.000E+00	.000E+00	
1297.2	1074.5	5.0000	370.19	-.797E-03	.000E+00	.000E+00	
1297.2	1074.5	5.0000	434.19	-.797E-03	.000E+00	.000E+00	
1297.0	1074.5	5.0000	690.19	-.798E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	733.30	-.798E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.3	1077.5	5.0000	349.19	-.689E-03	.000E+00	.000E+00	
1297.3	1077.5	5.0000	350.19	-.689E-03	.000E+00	.000E+00	
1297.3	1077.5	5.0000	354.19	-.689E-03	.000E+00	.000E+00	
1297.3	1077.5	5.0000	370.19	-.689E-03	.000E+00	.000E+00	
1297.2	1077.5	5.0000	434.19	-.689E-03	.000E+00	.000E+00	
1297.0	1077.5	5.0000	690.19	-.689E-03	.000E+00	.000E+00	
1297.0	1077.5	5.0000	733.30	-.689E-03	.000E+00	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.3	1080.5	5.0000	349.19	-.505E-03	.000E+00	.000E+00	
1297.3	1080.5	5.0000	350.19	-.505E-03	.000E+00	.000E+00	
1297.3	1080.5	5.0000	354.19	-.505E-03	.000E+00	.000E+00	
1297.3	1080.5	5.0000	370.19	-.505E-03	.000E+00	.000E+00	
1297.3	1080.5	5.0000	434.19	-.505E-03	.000E+00	.000E+00	
1297.2	1080.5	5.0000	690.19	-.505E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	733.30	-.505E-03	.000E+00	.000E+00	

TIME STEP NO. 3

TIME STEP NO. 3

FROM TIME = 733.30 TO 1155.8

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

=====

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.1	1068.5	5.0000	733.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	734.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	738.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	754.30	-.508E-03	.000E+00	.000E+00	
1297.1	1068.5	5.0000	818.30	-.508E-03	.000E+00	.000E+00	
1297.0	1068.5	5.0000	1074.3	-.508E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1155.8	-.508E-03	.512E-04	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.0	1071.5	5.0000	733.30	-.692E-03	.000E+00	.000E+00	
1297.0	1071.5	5.0000	734.30	-.692E-03	.000E+00	.000E+00	
1297.0	1071.5	5.0000	738.30	-.692E-03	.406E-04	.000E+00	
1297.0	1071.5	5.0000	754.30	-.692E-03	.406E-04	.000E+00	
1296.9	1071.5	5.0000	818.30	-.692E-03	.406E-04	.000E+00	
1296.8	1071.5	5.0000	1074.3	-.693E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1155.8	-.693E-03	.405E-04	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.9	1074.5	5.0000	733.30	-.801E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	734.30	-.801E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	738.30	-.801E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	754.30	-.802E-03	.000E+00	.000E+00	
1296.9	1074.5	5.0000	818.30	-.802E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1074.3	-.806E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1155.8	-.806E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.0	1077.5	5.0000	733.30	-.692E-03	.000E+00	.000E+00	
1297.0	1077.5	5.0000	734.30	-.692E-03	.000E+00	.000E+00	
1297.0	1077.5	5.0000	738.30	-.692E-03	.406E-04	.000E+00	
1297.0	1077.5	5.0000	754.30	-.692E-03	.406E-04	.000E+00	
1296.9	1077.5	5.0000	818.30	-.692E-03	.406E-04	.000E+00	
1296.8	1077.5	5.0000	1074.3	-.693E-03	.405E-04	.000E+00	
1296.7	1077.5	5.0000	1155.8	-.693E-03	.405E-04	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1297.1	1080.5	5.0000	733.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	734.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	738.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	754.30	-.508E-03	.000E+00	.000E+00	
1297.1	1080.5	5.0000	818.30	-.508E-03	.000E+00	.000E+00	
1297.0	1080.5	5.0000	1074.3	-.508E-03	.512E-04	.000E+00	
1296.9	1080.5	5.0000	1155.8	-.508E-03	.512E-04	.000E+00	

TIME STEP NO. 4

TIME STEP NO. 4

FROM TIME = 1155.8 TO 1620.6

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.9	1068.5	5.0000	1155.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1156.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1160.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1176.8	-.509E-03	.512E-04	.000E+00	
1296.9	1068.5	5.0000	1240.8	-.508E-03	.512E-04	.000E+00	
1296.7	1068.5	5.0000	1496.8	-.508E-03	.513E-04	.000E+00	
1296.7	1068.5	5.0000	1620.6	-.508E-03	.513E-04	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1071.5	5.0000	1155.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1156.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1160.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1176.8	-.695E-03	.405E-04	.000E+00	
1296.7	1071.5	5.0000	1240.8	-.695E-03	.405E-04	.000E+00	
1296.5	1071.5	5.0000	1496.8	-.696E-03	.404E-04	.000E+00	
1296.4	1071.5	5.0000	1620.6	-.696E-03	.404E-04	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.6	1074.5	5.0000	1155.8	-.808E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1156.8	-.808E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1160.8	-.808E-03	.000E+00	.000E+00	
1296.6	1074.5	5.0000	1176.8	-.808E-03	.000E+00	.000E+00	
1296.5	1074.5	5.0000	1240.8	-.809E-03	.000E+00	.000E+00	
1296.3	1074.5	5.0000	1496.8	-.812E-03	.000E+00	.000E+00	
1296.2	1074.5	5.0000	1620.6	-.813E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1077.5	5.0000	1155.8	-.695E-03	-.405E-04	.000E+00	
1296.7	1077.5	5.0000	1156.8	-.695E-03	-.405E-04	.000E+00	
1296.7	1077.5	5.0000	1160.8	-.695E-03	-.405E-04	.000E+00	
1296.7	1077.5	5.0000	1176.8	-.695E-03	-.405E-04	.000E+00	
1296.7	1077.5	5.0000	1240.8	-.695E-03	-.405E-04	.000E+00	
1296.5	1077.5	5.0000	1496.8	-.696E-03	-.404E-04	.000E+00	
1296.4	1077.5	5.0000	1620.6	-.696E-03	-.404E-04	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.9	1080.5	5.0000	1155.8	-.509E-03	-.512E-04	.000E+00	
1296.9	1080.5	5.0000	1156.8	-.509E-03	-.512E-04	.000E+00	
1296.9	1080.5	5.0000	1160.8	-.509E-03	-.512E-04	.000E+00	
1296.9	1080.5	5.0000	1176.8	-.509E-03	-.512E-04	.000E+00	
1296.9	1080.5	5.0000	1240.8	-.508E-03	-.512E-04	.000E+00	
1296.7	1080.5	5.0000	1496.8	-.508E-03	-.513E-04	.000E+00	
1296.7	1080.5	5.0000	1620.6	-.508E-03	-.513E-04	.000E+00	

TIME STEP NO. 5

TIME STEP NO. 5

FROM TIME = 1620.6 TO 2131.9

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1068.5	5.0000	1620.6	-.508E-03	.513E-04	.000E+00	
1296.7	1068.5	5.0000	1621.6	-.508E-03	.513E-04	.000E+00	
1296.7	1068.5	5.0000	1625.6	-.508E-03	.513E-04	.000E+00	
1296.7	1068.5	5.0000	1641.6	-.508E-03	.513E-04	.000E+00	
1296.6	1068.5	5.0000	1705.6	-.508E-03	.513E-04	.000E+00	
1296.5	1068.6	5.0000	1961.6	-.508E-03	.513E-04	.000E+00	
1296.4	1068.6	5.0000	2131.9	-.508E-03	.513E-04	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1071.5	5.0000	1620.6	-.697E-03	.404E-04	.000E+00	
1296.4	1071.5	5.0000	1621.6	-.697E-03	.404E-04	.000E+00	
1296.4	1071.5	5.0000	1625.6	-.697E-03	.404E-04	.000E+00	
1296.4	1071.5	5.0000	1641.6	-.697E-03	.404E-04	.000E+00	
1296.3	1071.5	5.0000	1705.6	-.697E-03	.404E-04	.000E+00	
1296.1	1071.6	5.0000	1961.6	-.698E-03	.404E-04	.000E+00	
1296.0	1071.6	5.0000	2131.9	-.698E-03	.403E-04	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.2	1074.5	5.0000	1620.6	-.815E-03	.000E+00	.000E+00	
1296.2	1074.5	5.0000	1621.6	-.815E-03	.000E+00	.000E+00	
1296.2	1074.5	5.0000	1625.6	-.815E-03	.000E+00	.000E+00	
1296.2	1074.5	5.0000	1641.6	-.815E-03	.000E+00	.000E+00	
1296.1	1074.5	5.0000	1705.6	-.816E-03	.000E+00	.000E+00	
1295.9	1074.5	5.0000	1961.6	-.821E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2131.9	-.823E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1077.5	5.0000	1620.6	-.697E-03	-.404E-04	.000E+00	
1296.4	1077.5	5.0000	1621.6	-.697E-03	-.404E-04	.000E+00	
1296.4	1077.5	5.0000	1625.6	-.697E-03	-.404E-04	.000E+00	
1296.4	1077.5	5.0000	1641.6	-.697E-03	-.404E-04	.000E+00	
1296.3	1077.5	5.0000	1705.6	-.697E-03	-.404E-04	.000E+00	
1296.1	1077.4	5.0000	1961.6	-.698E-03	-.404E-04	.000E+00	
1296.0	1077.4	5.0000	2131.9	-.698E-03	-.403E-04	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.7	1080.5	5.0000	1620.6	-.508E-03	-.513E-04	.000E+00	
1296.7	1080.5	5.0000	1621.6	-.508E-03	-.513E-04	.000E+00	
1296.7	1080.5	5.0000	1625.6	-.508E-03	-.513E-04	.000E+00	
1296.7	1080.5	5.0000	1641.6	-.508E-03	-.513E-04	.000E+00	
1296.6	1080.5	5.0000	1705.6	-.508E-03	-.513E-04	.000E+00	
1296.5	1080.4	5.0000	1961.6	-.508E-03	-.513E-04	.000E+00	
1296.4	1080.4	5.0000	2131.9	-.508E-03	-.513E-04	.000E+00	

TIME STEP NO. 6

TIME STEP NO. 6

FROM TIME = 2131.9 TO 2694.2

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1068.6	5.0000	2131.9	-.508E-03	.514E-04	.000E+00	
1296.4	1068.6	5.0000	2132.9	-.508E-03	.514E-04	.000E+00	
1296.4	1068.6	5.0000	2136.9	-.508E-03	.514E-04	.000E+00	
1296.4	1068.6	5.0000	2152.9	-.508E-03	.514E-04	.000E+00	
1296.4	1068.6	5.0000	2216.9	-.508E-03	.514E-04	.000E+00	
1296.3	1068.6	5.0000	2472.9	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2694.2	-.507E-03	.514E-04	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.0	1071.6	5.0000	2131.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2132.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2136.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2152.9	-.699E-03	.403E-04	.000E+00	
1296.0	1071.6	5.0000	2216.9	-.699E-03	.844E-04	.000E+00	
1295.8	1071.6	5.0000	2472.9	-.701E-03	.842E-04	.000E+00	
1295.6	1071.6	5.0000	2694.2	-.701E-03	.841E-04	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.8	1074.5	5.0000	2131.9	-.826E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2132.9	-.826E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2136.9	-.826E-03	.000E+00	.000E+00	
1295.8	1074.5	5.0000	2152.9	-.826E-03	.000E+00	.000E+00	
1295.7	1074.5	5.0000	2216.9	-.828E-03	.000E+00	.000E+00	
1295.5	1074.5	5.0000	2472.9	-.836E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2694.2	-.839E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.0	1077.4	5.0000	2131.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2132.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2136.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2152.9	-.699E-03	-.403E-04	.000E+00	
1296.0	1077.4	5.0000	2216.9	-.699E-03	-.844E-04	.000E+00	
1295.8	1077.4	5.0000	2472.9	-.701E-03	-.842E-04	.000E+00	
1295.6	1077.4	5.0000	2694.2	-.701E-03	-.841E-04	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.4	1080.4	5.0000	2131.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2132.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2136.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2152.9	-.508E-03	-.514E-04	.000E+00	
1296.4	1080.4	5.0000	2216.9	-.508E-03	-.514E-04	.000E+00	
1296.3	1080.4	5.0000	2472.9	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2694.2	-.507E-03	-.514E-04	.000E+00	

TIME STEP NO. 7

TIME STEP NO. 7

FROM TIME = 2694.2 TO 3312.8

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.1	1068.6	5.0000	2694.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2695.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2699.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2715.2	-.507E-03	.514E-04	.000E+00	
1296.1	1068.6	5.0000	2779.2	-.507E-03	.515E-04	.000E+00	
1296.0	1068.6	5.0000	3035.2	-.507E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3312.8	-.506E-03	.105E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.6	1071.6	5.0000	2694.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2695.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2699.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2715.2	-.702E-03	.840E-04	.000E+00	
1295.6	1071.6	5.0000	2779.2	-.703E-03	.839E-04	.000E+00	
1295.4	1071.6	5.0000	3035.2	-.704E-03	.838E-04	.000E+00	
1295.2	1071.7	5.0000	3312.8	-.705E-03	.836E-04	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.3	1074.5	5.0000	2694.2	-.842E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2695.2	-.843E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2699.2	-.843E-03	.000E+00	.000E+00	
1295.3	1074.5	5.0000	2715.2	-.843E-03	.000E+00	.000E+00	
1295.2	1074.5	5.0000	2779.2	-.845E-03	.000E+00	.000E+00	
1295.0	1074.5	5.0000	3035.2	-.853E-03	.000E+00	.000E+00	
1294.8	1074.5	5.0000	3312.8	-.859E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.6	1077.4	5.0000	2694.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2695.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2699.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2715.2	-.702E-03	-.840E-04	.000E+00	
1295.6	1077.4	5.0000	2779.2	-.703E-03	-.839E-04	.000E+00	
1295.4	1077.4	5.0000	3035.2	-.704E-03	-.838E-04	.000E+00	
1295.2	1077.3	5.0000	3312.8	-.705E-03	-.836E-04	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1296.1	1080.4	5.0000	2694.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2695.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2699.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2715.2	-.507E-03	-.514E-04	.000E+00	
1296.1	1080.4	5.0000	2779.2	-.507E-03	-.515E-04	.000E+00	
1296.0	1080.4	5.0000	3035.2	-.507E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3312.8	-.506E-03	-.105E-03	.000E+00	

TIME STEP NO. 8

TIME STEP NO. 8

FROM TIME = 3312.8 TO 3993.3

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.8	1068.6	5.0000	3312.8	-.506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3313.8	-.506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3317.8	-.506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3333.8	-.506E-03	.105E-03	.000E+00	
1295.8	1068.6	5.0000	3397.8	-.506E-03	.105E-03	.000E+00	
1295.7	1068.7	5.0000	3653.8	-.505E-03	.105E-03	.000E+00	
1295.5	1068.7	5.0000	3993.3	-.504E-03	.106E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.2	1071.7	5.0000	3312.8	-.706E-03	.835E-04	.000E+00	
1295.2	1071.7	5.0000	3313.8	-.706E-03	.835E-04	.000E+00	
1295.2	1071.7	5.0000	3317.8	-.706E-03	.835E-04	.000E+00	
1295.2	1071.7	5.0000	3333.8	-.706E-03	.835E-04	.000E+00	
1295.1	1071.7	5.0000	3397.8	-.707E-03	.835E-04	.000E+00	
1295.0	1071.7	5.0000	3653.8	-.709E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	3993.3	-.710E-03	.135E-03	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.8	1074.5	5.0000	3312.8	-.866E-03	.000E+00	.000E+00	
1294.8	1074.5	5.0000	3313.8	-.866E-03	.000E+00	.000E+00	

1294.8	1074.5	5.0000	3317.8	-.866E-03	.000E+00	.000E+00
1294.8	1074.5	5.0000	3333.8	-.867E-03	.000E+00	.000E+00
1294.7	1074.5	5.0000	3397.8	-.871E-03	.000E+00	.000E+00
1294.5	1074.5	5.0000	3653.8	-.884E-03	.000E+00	.000E+00
1294.2	1074.5	5.0000	3993.3	-.893E-03	.000E+00	.000E+00

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.2	1077.3	5.0000	3312.8	-.706E-03	-.835E-04	.000E+00	
1295.2	1077.3	5.0000	3313.8	-.706E-03	-.835E-04	.000E+00	
1295.2	1077.3	5.0000	3317.8	-.706E-03	-.835E-04	.000E+00	
1295.2	1077.3	5.0000	3333.8	-.706E-03	-.835E-04	.000E+00	
1295.1	1077.3	5.0000	3397.8	-.707E-03	-.835E-04	.000E+00	
1295.0	1077.3	5.0000	3653.8	-.709E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	3993.3	-.710E-03	-.135E-03	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.8	1080.4	5.0000	3312.8	-.506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3313.8	-.506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3317.8	-.506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3333.8	-.506E-03	-.105E-03	.000E+00	
1295.8	1080.4	5.0000	3397.8	-.506E-03	-.105E-03	.000E+00	
1295.7	1080.3	5.0000	3653.8	-.505E-03	-.105E-03	.000E+00	
1295.5	1080.3	5.0000	3993.3	-.504E-03	-.106E-03	.000E+00	

TIME STEP NO. 9

TIME STEP NO. 9

FROM TIME = 3993.3 TO 4741.9

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.5	1068.7	5.0000	3993.3	-.504E-03	.106E-03	.000E+00	
1295.5	1068.7	5.0000	3994.3	-.504E-03	.106E-03	.000E+00	
1295.5	1068.7	5.0000	3998.3	-.504E-03	.106E-03	.000E+00	
1295.5	1068.7	5.0000	4014.3	-.504E-03	.106E-03	.000E+00	
1295.4	1068.7	5.0000	4078.3	-.503E-03	.106E-03	.000E+00	
1295.3	1068.7	5.0000	4334.3	-.503E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4741.9	-.502E-03	.106E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1071.7	5.0000	3993.3	-.711E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	3994.3	-.711E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	3998.3	-.712E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	4014.3	-.712E-03	.135E-03	.000E+00	
1294.7	1071.7	5.0000	4078.3	-.712E-03	.135E-03	.000E+00	
1294.5	1071.8	5.0000	4334.3	-.714E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4741.9	-.716E-03	.134E-03	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1074.5	5.0000	3993.3	-.902E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	3994.3	-.902E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	3998.3	-.902E-03	.000E+00	.000E+00	
1294.2	1074.5	5.0000	4014.3	-.903E-03	.000E+00	.000E+00	
1294.1	1074.5	5.0000	4078.3	-.906E-03	.000E+00	.000E+00	
1293.9	1074.5	5.0000	4334.3	-.924E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4741.9	-.942E-03	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1077.3	5.0000	3993.3	-.711E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	3994.3	-.711E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	3998.3	-.712E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	4014.3	-.712E-03	-.135E-03	.000E+00	
1294.7	1077.3	5.0000	4078.3	-.712E-03	-.135E-03	.000E+00	
1294.5	1077.2	5.0000	4334.3	-.714E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4741.9	-.716E-03	-.134E-03	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.5	1080.3	5.0000	3993.3	-.504E-03	-.106E-03	.000E+00	
1295.5	1080.3	5.0000	3994.3	-.504E-03	-.106E-03	.000E+00	
1295.5	1080.3	5.0000	3998.3	-.504E-03	-.106E-03	.000E+00	
1295.5	1080.3	5.0000	4014.3	-.504E-03	-.106E-03	.000E+00	
1295.4	1080.3	5.0000	4078.3	-.503E-03	-.106E-03	.000E+00	
1295.3	1080.3	5.0000	4334.3	-.503E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4741.9	-.502E-03	-.106E-03	.000E+00	

TIME STEP NO. 10

TIME STEP NO. 10

FROM TIME = 4741.9 TO 5565.2

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.1	1068.8	5.0000	4741.9	- .501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4742.9	- .501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4746.9	- .501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4762.9	- .501E-03	.106E-03	.000E+00	
1295.1	1068.8	5.0000	4826.9	- .501E-03	.106E-03	.000E+00	
1294.9	1068.8	5.0000	5082.9	- .500E-03	.165E-03	.000E+00	
1294.7	1068.9	5.0000	5565.2	- .499E-03	.165E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1071.8	5.0000	4741.9	- .718E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4742.9	- .718E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4746.9	- .718E-03	.134E-03	.000E+00	
1294.2	1071.8	5.0000	4762.9	- .718E-03	.134E-03	.000E+00	
1294.1	1071.8	5.0000	4826.9	- .719E-03	.133E-03	.000E+00	
1293.9	1071.9	5.0000	5082.9	- .721E-03	.200E-03	.000E+00	
1293.6	1072.0	5.0000	5565.2	- .723E-03	.199E-03	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.5	1074.5	5.0000	4741.9	- .960E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4742.9	- .960E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4746.9	- .961E-03	.000E+00	.000E+00	
1293.5	1074.5	5.0000	4762.9	- .962E-03	.000E+00	.000E+00	
1293.4	1074.5	5.0000	4826.9	- .968E-03	.000E+00	.000E+00	
1293.2	1074.5	5.0000	5082.9	- .991E-03	.000E+00	.000E+00	
1292.7	1074.5	5.0000	5565.2	- .102E-02	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1077.2	5.0000	4741.9	- .718E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4742.9	- .718E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4746.9	- .718E-03	-.134E-03	.000E+00	
1294.2	1077.2	5.0000	4762.9	- .718E-03	-.134E-03	.000E+00	
1294.1	1077.2	5.0000	4826.9	- .719E-03	-.133E-03	.000E+00	
1293.9	1077.1	5.0000	5082.9	- .721E-03	-.200E-03	.000E+00	
1293.6	1077.0	5.0000	5565.2	- .723E-03	-.199E-03	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1295.1	1080.2	5.0000	4741.9	- .501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4742.9	- .501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4746.9	- .501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4762.9	- .501E-03	-.106E-03	.000E+00	
1295.1	1080.2	5.0000	4826.9	- .501E-03	-.106E-03	.000E+00	
1294.9	1080.2	5.0000	5082.9	- .500E-03	-.165E-03	.000E+00	
1294.7	1080.1	5.0000	5565.2	- .499E-03	-.165E-03	.000E+00	

TIME STEP NO. 11

TIME STEP NO. 11

FROM TIME = 5565.2 TO 6470.9

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1068.9	5.0000	5565.2	- .497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5566.2	- .497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5570.2	- .497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5586.2	- .497E-03	.166E-03	.000E+00	
1294.7	1068.9	5.0000	5650.2	- .497E-03	.166E-03	.000E+00	
1294.5	1069.0	5.0000	5906.2	- .496E-03	.166E-03	.000E+00	
1294.2	1069.1	5.0000	6470.9	- .716E-03	.167E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.6	1072.0	5.0000	5565.2	- .725E-03	.199E-03	.000E+00	
1293.6	1072.0	5.0000	5566.2	- .725E-03	.199E-03	.000E+00	
1293.6	1072.0	5.0000	5570.2	- .725E-03	.199E-03	.000E+00	
1293.6	1072.0	5.0000	5586.2	- .725E-03	.199E-03	.000E+00	
1293.5	1072.0	5.0000	5650.2	- .725E-03	.199E-03	.000E+00	
1293.3	1072.0	5.0000	5906.2	- .941E-03	.195E-03	.000E+00	
1292.7	1072.2	5.0000	6470.9	- .961E-03	.191E-03	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1074.5	5.0000	5565.2	- .106E-02	.000E+00	.000E+00	
1292.7	1074.5	5.0000	5566.2	- .106E-02	.000E+00	.000E+00	
1292.7	1074.5	5.0000	5570.2	- .106E-02	.000E+00	.000E+00	
1292.6	1074.5	5.0000	5586.2	- .106E-02	.000E+00	.000E+00	
1292.6	1074.5	5.0000	5650.2	- .107E-02	.000E+00	.000E+00	
1292.3	1074.5	5.0000	5906.2	- .111E-02	.000E+00	.000E+00	
1291.6	1074.5	5.0000	6470.9	- .116E-02	.318E-08	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.6	1077.0	5.0000	5565.2	-.725E-03	-.199E-03	.000E+00	
1293.6	1077.0	5.0000	5566.2	-.725E-03	-.199E-03	.000E+00	
1293.6	1077.0	5.0000	5570.2	-.725E-03	-.199E-03	.000E+00	
1293.6	1077.0	5.0000	5586.2	-.725E-03	-.199E-03	.000E+00	
1293.5	1077.0	5.0000	5650.2	-.725E-03	-.199E-03	.000E+00	
1293.3	1077.0	5.0000	5906.2	-.941E-03	-.195E-03	.000E+00	
1292.7	1076.8	5.0000	6470.9	-.961E-03	-.191E-03	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.7	1080.1	5.0000	5565.2	-.497E-03	-.166E-03	.000E+00	
1294.7	1080.1	5.0000	5566.2	-.497E-03	-.166E-03	.000E+00	
1294.7	1080.1	5.0000	5570.2	-.497E-03	-.166E-03	.000E+00	
1294.7	1080.1	5.0000	5586.2	-.497E-03	-.166E-03	.000E+00	
1294.7	1080.1	5.0000	5650.2	-.497E-03	-.166E-03	.000E+00	
1294.5	1080.0	5.0000	5906.2	-.496E-03	-.166E-03	.000E+00	
1294.2	1079.9	5.0000	6470.9	-.716E-03	-.167E-03	.000E+00	

TIME STEP NO. 12

TIME STEP NO. 12

FROM TIME = 6470.9 TO 7467.2

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1069.1	5.0000	6470.9	-.718E-03	.166E-03	.000E+00	
1294.2	1069.1	5.0000	6471.9	-.718E-03	.166E-03	.000E+00	
1294.2	1069.1	5.0000	6475.9	-.718E-03	.166E-03	.000E+00	
1294.2	1069.1	5.0000	6491.9	-.718E-03	.166E-03	.000E+00	
1294.1	1069.1	5.0000	6555.9	-.719E-03	.166E-03	.000E+00	
1293.9	1069.1	5.0000	6811.9	-.721E-03	.231E-03	.000E+00	
1293.5	1069.3	5.0000	7467.2	-.724E-03	.230E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1072.2	5.0000	6470.9	-.990E-03	.272E-03	.000E+00	
1292.7	1072.2	5.0000	6471.9	-.990E-03	.272E-03	.000E+00	
1292.7	1072.2	5.0000	6475.9	-.991E-03	.272E-03	.000E+00	
1292.7	1072.2	5.0000	6491.9	-.992E-03	.272E-03	.000E+00	
1292.7	1072.2	5.0000	6555.9	-.999E-03	.270E-03	.000E+00	
1292.4	1072.3	5.0000	6811.9	-.103E-02	.263E-03	.000E+00	
1291.7	1072.5	5.0000	7467.2	-.106E-02	.253E-03	.000E+00	

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1291.6	1074.5	5.0000	6470.9	-.126E-02	.318E-08	.000E+00	
1291.6	1074.5	5.0000	6471.9	-.126E-02	.318E-08	.000E+00	
1291.6	1074.5	5.0000	6475.9	-.126E-02	.318E-08	.000E+00	
1291.6	1074.5	5.0000	6491.9	-.126E-02	.318E-08	.000E+00	
1291.5	1074.5	5.0000	6555.9	-.128E-02	.318E-08	.000E+00	
1291.2	1074.5	5.0000	6811.9	-.138E-02	.318E-08	.000E+00	
1290.1	1074.5	5.0000	7467.2	-.158E-02	.000E+00	.000E+00	

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1076.8	5.0000	6470.9	-.990E-03	-.272E-03	.000E+00	
1292.7	1076.8	5.0000	6471.9	-.990E-03	-.272E-03	.000E+00	
1292.7	1076.8	5.0000	6475.9	-.991E-03	-.272E-03	.000E+00	
1292.7	1076.8	5.0000	6491.9	-.993E-03	-.272E-03	.000E+00	
1292.7	1076.8	5.0000	6555.9	-.999E-03	-.270E-03	.000E+00	
1292.4	1076.7	5.0000	6811.9	-.103E-02	-.263E-03	.000E+00	
1291.7	1076.5	5.0000	7467.2	-.106E-02	-.253E-03	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1294.2	1079.9	5.0000	6470.9	-.718E-03	-.166E-03	.000E+00	
1294.2	1079.9	5.0000	6471.9	-.718E-03	-.166E-03	.000E+00	
1294.2	1079.9	5.0000	6475.9	-.718E-03	-.166E-03	.000E+00	
1294.2	1079.9	5.0000	6491.9	-.718E-03	-.166E-03	.000E+00	
1294.1	1079.9	5.0000	6555.9	-.719E-03	-.166E-03	.000E+00	
1293.9	1079.9	5.0000	6811.9	-.721E-03	-.231E-03	.000E+00	
1293.5	1079.7	5.0000	7467.2	-.724E-03	-.230E-03	.000E+00	

TIME STEP NO. 13

TIME STEP NO. 13

FROM TIME = 7467.2 TO 8563.1

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.5	1069.3	5.0000	7467.2	-.726E-03	.229E-03	.000E+00	
1293.5	1069.3	5.0000	7468.2	-.726E-03	.229E-03	.000E+00	
1293.5	1069.3	5.0000	7472.2	-.726E-03	.229E-03	.000E+00	
1293.4	1069.3	5.0000	7488.2	-.726E-03	.229E-03	.000E+00	
1293.4	1069.3	5.0000	7552.2	-.727E-03	.229E-03	.000E+00	
1293.2	1069.4	5.0000	7808.2	-.729E-03	.229E-03	.000E+00	
1292.7	1069.6	5.0000	8563.1	-.732E-03	.304E-03	.000E+00	
+Particle No. 2 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1291.7	1072.5	5.0000	7467.2	-.111E-02	.357E-03	.000E+00	
1291.7	1072.5	5.0000	7468.2	-.111E-02	.357E-03	.000E+00	
1291.7	1072.5	5.0000	7472.2	-.111E-02	.357E-03	.000E+00	
1291.7	1072.5	5.0000	7488.2	-.112E-02	.356E-03	.000E+00	
1291.6	1072.5	5.0000	7552.2	-.113E-02	.353E-03	.000E+00	
1291.3	1072.6	5.0000	7808.2	-.117E-02	.340E-03	.000E+00	
1290.4	1072.9	5.0000	8563.1	-.124E-02	.496E-03	.000E+00	
+Particle No. 1 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1290.1	1074.5	5.0000	7467.2	-.189E-02	.317E-08	.000E+00	
1290.1	1074.5	5.0000	7468.2	-.190E-02	.317E-08	.000E+00	
1290.1	1074.5	5.0000	7472.2	-.190E-02	.317E-08	.000E+00	
1290.1	1074.5	5.0000	7488.2	-.192E-02	.317E-08	.000E+00	
1290.0	1074.5	5.0000	7552.2	-.200E-02	.000E+00	.000E+00	
1289.4	1074.5	5.0000	7808.2	-.281E-02	.000E+00	.000E+00	
1288.2	1074.5	5.0000	8563.1	-.698E-02	.320E-08	.000E+00	
+Particle No. 4 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1291.7	1076.5	5.0000	7467.2	-.111E-02	.357E-03	.000E+00	
1291.7	1076.5	5.0000	7468.2	-.111E-02	.357E-03	.000E+00	
1291.7	1076.5	5.0000	7472.2	-.111E-02	.357E-03	.000E+00	
1291.7	1076.5	5.0000	7488.2	-.112E-02	.356E-03	.000E+00	
1291.6	1076.5	5.0000	7552.2	-.113E-02	.353E-03	.000E+00	
1291.3	1076.4	5.0000	7808.2	-.117E-02	.340E-03	.000E+00	
1290.4	1076.1	5.0000	8563.1	-.124E-02	.496E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1293.5	1079.7	5.0000	7467.2	-.726E-03	-.229E-03	.000E+00	
1293.5	1079.7	5.0000	7468.2	-.726E-03	-.229E-03	.000E+00	
1293.5	1079.7	5.0000	7472.2	-.726E-03	-.229E-03	.000E+00	
1293.4	1079.7	5.0000	7488.2	-.726E-03	-.229E-03	.000E+00	
1293.4	1079.7	5.0000	7552.2	-.727E-03	-.229E-03	.000E+00	
1293.2	1079.6	5.0000	7808.2	-.729E-03	-.229E-03	.000E+00	
1292.7	1079.4	5.0000	8563.1	-.732E-03	-.304E-03	.000E+00	

TIME STEP NO. 14

TIME STEP NO. 14

FROM TIME = 8563.1 TO 9768.7

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

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PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1069.6	5.0000	8563.1	-.733E-03	.304E-03	.000E+00	
1292.7	1069.6	5.0000	8564.1	-.733E-03	.304E-03	.000E+00	
1292.7	1069.6	5.0000	8568.1	-.733E-03	.304E-03	.000E+00	
1292.6	1069.6	5.0000	8584.1	-.733E-03	.304E-03	.000E+00	
1292.6	1069.6	5.0000	8648.1	-.734E-03	.304E-03	.000E+00	
1292.4	1069.7	5.0000	8904.1	-.735E-03	.303E-03	.000E+00	
1291.8	1070.0	5.0000	9768.7	-.736E-03	.302E-03	.000E+00	
+Particle No. 2 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1290.4	1072.9	5.0000	8563.1	-.132E-02	.465E-03	.000E+00	
1290.4	1072.9	5.0000	8564.1	-.132E-02	.465E-03	.000E+00	
1290.4	1072.9	5.0000	8568.1	-.133E-02	.465E-03	.000E+00	
1290.3	1072.9	5.0000	8584.1	-.133E-02	.464E-03	.000E+00	
1290.3	1072.9	5.0000	8648.1	-.134E-02	.458E-03	.000E+00	
1289.9	1073.1	5.0000	8904.1	-.140E-02	.777E-03	.000E+00	
1288.9	1073.7	5.0000	9621.9	-.147E-02	.176E-02	.000E+00	
1288.7	1073.9	5.0000	9768.7	-.144E-02	.179E-02	.000E+00	
+Particle No. 3 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1288.2	1074.5	5.0000	8563.1	-.634E-02	.000E+00	.000E+00	
1288.2	1074.5	5.0000	8564.1	-.636E-02	.000E+00	.000E+00	
1288.1	1074.5	5.0000	8568.1	-.646E-02	.000E+00	.000E+00	
1288.0	1074.5	5.0000	8584.1	-.685E-02	.000E+00	.000E+00	
1287.7	1074.5	5.0000	8648.1	-.320E-02	.000E+00	.000E+00	
REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21							
+Particle No. 4 in progress							
PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1290.4	1076.1	5.0000	8563.1	-.132E-02	-.465E-03	.000E+00	

Particle No.	X	Y	Z	TIME	Vx	Vy	Vz
1290.4	1076.1	5.0000	8564.1	- .132E-02	- .465E-03	.000E+00	
1290.4	1076.1	5.0000	8568.1	- .133E-02	- .465E-03	.000E+00	
1290.3	1076.1	5.0000	8584.1	- .133E-02	- .464E-03	.000E+00	
1290.3	1076.1	5.0000	8648.1	- .134E-02	- .458E-03	.000E+00	
1289.9	1075.9	5.0000	8904.1	- .140E-02	- .777E-03	.000E+00	
1288.9	1075.3	5.0000	9621.9	- .147E-02	- .176E-02	.000E+00	
1288.7	1075.1	5.0000	9768.7	- .144E-02	- .179E-02	.000E+00	

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1292.7	1079.4	5.0000	8563.1	- .733E-03	- .304E-03	.000E+00	
1292.7	1079.4	5.0000	8564.1	- .733E-03	- .304E-03	.000E+00	
1292.7	1079.4	5.0000	8568.1	- .733E-03	- .304E-03	.000E+00	
1292.6	1079.4	5.0000	8584.1	- .733E-03	- .304E-03	.000E+00	
1292.6	1079.4	5.0000	8648.1	- .734E-03	- .304E-03	.000E+00	
1292.4	1079.3	5.0000	8904.1	- .735E-03	- .303E-03	.000E+00	
1291.8	1079.0	5.0000	9768.7	- .736E-03	- .302E-03	.000E+00	

TIME STEP NO. 15

TIME STEP NO. 15

FROM TIME = 9768.7 TO 11095.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

=====

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1291.8	1070.0	5.0000	9768.7	- .734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9769.7	- .734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9773.7	- .734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9789.7	- .734E-03	.401E-03	.000E+00	
1291.7	1070.0	5.0000	9853.7	- .733E-03	.401E-03	.000E+00	
1291.5	1070.1	5.0000	10110.	- .731E-03	.402E-03	.000E+00	
1290.8	1070.6	5.0000	11095.	- .727E-03	.405E-03	.000E+00	

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1288.7	1073.9	5.0000	9768.7	- .141E-02	.183E-02	.000E+00	
1288.7	1073.9	5.0000	9769.7	- .141E-02	.183E-02	.000E+00	
1288.6	1073.9	5.0000	9773.7	- .141E-02	.183E-02	.000E+00	
1288.6	1074.0	5.0000	9789.7	- .141E-02	.184E-02	.000E+00	
1288.4	1074.1	5.0000	9853.7	- .554E-02	.161E-02	.000E+00	
1287.8	1074.3	5.0000	9958.8	- .401E-02	.235E-02	.000E+00	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1291.8	1070.0	5.0000	9768.7	- .734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9769.7	- .734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9773.7	- .734E-03	.401E-03	.000E+00	
1291.8	1070.0	5.0000	9789.7	- .734E-03	.401E-03	.000E+00	
1291.7	1070.0	5.0000	9853.7	- .733E-03	.401E-03	.000E+00	
1291.5	1070.1	5.0000	10110.	- .731E-03	.402E-03	.000E+00	
1290.8	1070.6	5.0000	11095.	- .727E-03	.405E-03	.000E+00	

PARTICLE HAS ALREADY BEEN REMOVED

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1288.7	1075.1	5.0000	9768.7	- .141E-02	- .183E-02	.000E+00	
1288.7	1075.1	5.0000	9769.7	- .141E-02	- .183E-02	.000E+00	
1288.6	1075.1	5.0000	9773.7	- .141E-02	- .183E-02	.000E+00	
1288.6	1075.0	5.0000	9789.7	- .141E-02	- .184E-02	.000E+00	
1288.4	1074.9	5.0000	9853.7	- .554E-02	- .161E-02	.000E+00	
1287.8	1074.7	5.0000	9958.8	- .401E-02	- .235E-02	.000E+00	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1291.8	1079.0	5.0000	9768.7	- .734E-03	- .401E-03	.000E+00	
1291.8	1079.0	5.0000	9769.7	- .734E-03	- .401E-03	.000E+00	
1291.8	1079.0	5.0000	9773.7	- .734E-03	- .401E-03	.000E+00	
1291.8	1079.0	5.0000	9789.7	- .734E-03	- .401E-03	.000E+00	
1291.7	1079.0	5.0000	9853.7	- .733E-03	- .401E-03	.000E+00	
1291.5	1078.9	5.0000	10110.	- .731E-03	- .402E-03	.000E+00	
1290.8	1078.4	5.0000	11095.	- .727E-03	- .405E-03	.000E+00	

TIME STEP NO. 16

TIME STEP NO. 16

FROM TIME = 11095. TO 12553.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

=====

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

=====

+Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1290.8	1070.6	5.0000	11095.	- .716E-03	.553E-03	.000E+00	
1290.8	1070.6	5.0000	11096.	- .716E-03	.553E-03	.000E+00	
1290.8	1070.6	5.0000	11100.	- .716E-03	.553E-03	.000E+00	
1290.8	1070.6	5.0000	11116.	- .715E-03	.553E-03	.000E+00	
1290.7	1070.6	5.0000	11180.	- .713E-03	.555E-03	.000E+00	
1290.6	1070.7	5.0000	11436.	- .704E-03	.562E-03	.000E+00	
1289.9	1071.4	5.0000	12460.	- .662E-03	.834E-03	.000E+00	

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1289.8	1071.4	5.0000	12553.	-.658E-03	.839E-03	.000E+00	
+Particle No. 2 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12554.	-.655E-03	.843E-03	.000E+00	
+Particle No. 3 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12558.	-.655E-03	.843E-03	.000E+00	
+Particle No. 4 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12574.	-.653E-03	.845E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12638.	-.649E-03	.851E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12894.	-.630E-03	.876E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	13918.	-.136E-02	.153E-02	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	14158.	-.131E-02	.159E-02	.000E+00	

TIME STEP NO. 17

TIME STEP NO. 17

FROM TIME = 12553. TO 14158.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1289.8	1071.4	5.0000	12553.	-.655E-03	.843E-03	.000E+00	
1289.8	1071.4	5.0000	12554.	-.655E-03	.843E-03	.000E+00	
1289.8	1071.4	5.0000	12558.	-.655E-03	.843E-03	.000E+00	
1289.8	1071.5	5.0000	12574.	-.653E-03	.845E-03	.000E+00	
1289.7	1071.5	5.0000	12638.	-.649E-03	.851E-03	.000E+00	
1289.6	1071.7	5.0000	12894.	-.630E-03	.876E-03	.000E+00	
1288.5	1072.9	5.0000	13918.	-.136E-02	.153E-02	.000E+00	
1288.1	1073.3	5.0000	14158.	-.131E-02	.159E-02	.000E+00	
+Particle No. 2 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12553.	-.655E-03	.843E-03	.000E+00	
+Particle No. 3 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12558.	-.655E-03	.843E-03	.000E+00	
+Particle No. 4 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12574.	-.653E-03	.845E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12638.	-.649E-03	.851E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	12894.	-.630E-03	.876E-03	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	13918.	-.136E-02	.153E-02	.000E+00	
+Particle No. 5 in progress							
PARTICLE HAS ALREADY BEEN REMOVED							
1289.8	1071.4	5.0000	14158.	-.131E-02	.159E-02	.000E+00	

TIME STEP NO. 18

TIME STEP NO. 18

FROM TIME = 14158. TO 15923.

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

PARTICLE COORDINATES, TRAVEL TIMES AND VELOCITY COMPONENTS

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1288.1	1073.3	5.0000	14158.	-.127E-02	.164E-02	.000E+00	
1288.1	1073.3	5.0000	14159.	-.127E-02	.164E-02	.000E+00	
1288.1	1073.3	5.0000	14163.	-.127E-02	.164E-02	.000E+00	
1288.1	1073.3	5.0000	14179.	-.126E-02	.165E-02	.000E+00	
1288.5	1073.4	5.0000	14243.	-.124E-02	.168E-02	.000E+00	
1287.5	1074.4	5.0000	14499.	-.571E-03	.164E-02	.000E+00	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

+Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
PARTICLE HAS ALREADY BEEN REMOVED							

+Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
PARTICLE HAS ALREADY BEEN REMOVED							

+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
PARTICLE HAS ALREADY BEEN REMOVED							

+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	Vx	Vy	Vz
1288.1	1075.7	5.0000	14158.	-.127E-02	-.164E-02	.000E+00	
1288.1	1075.7	5.0000	14159.	-.127E-02	-.164E-02	.000E+00	
1288.1	1075.7	5.0000	14163.	-.127E-02	-.164E-02	.000E+00	
1288.1	1075.6	5.0000	14179.	-.126E-02	-.165E-02	.000E+00	
1288.0	1075.6	5.0000	14243.	-.124E-02	-.168E-02	.000E+00	
1287.5	1074.6	5.0000	14499.	-.571E-03	-.164E-02	.000E+00	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 16, J= 21

>>ALL PARTICLES HAVE ALREADY BEEN REMOVED

Output for example 3 from original PATH3D PC executable file

```

*****
+
+           P A T H 3 D
+   A Ground-Water Path and Travel-Time Simulator
+   (V. 3.20)
+
*****

```

EXAMPLE 3:
 3-D WITH INJECTION AND PUMPING WELLS
 FLOW MODEL CONSISTS OF 6 LAYERS 21 ROWS 31 COLUMNS
 NUMBER OF STRESS PERIOD(S) IN SIMULATION = 1
 TIME UNIT USED IN THE MODEL IS DAYS
 PACKAGE: BCP WEL DRN RIV EVT GHB RCH STR
 UNIT: 11 12 0 0 0 0 0 0 0
 FLOW FIELD IS STEADY-STATE (ISS NOT 0)
 WETTING CAPABILITY IS NOT ACTIVE
 HEAD AT CELLS THAT CONVERT TO DRY= .10000E+31
 MAXIMUM NUMBER OF WELLS = 2
 MAXIMUM NUMBER OF PARTICLES ALLOWED = 8
 FILE (P3DPLOT.DAT) SAVED IN UNIT 4 FOR PLOTTING PATH LINES
 INITIAL PARTICLE POSITIONS ARE ENTERED IN X, Y, Z COORDINATES
 PARTICLE REMOVAL OPTION (1) IS SELECTED
 40841 ELEMENTS OF THE Y ARRAY USED OUT OF 9999999

```

-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 1 READ ON UNIT 1 USING FORMAT: *(31I2)
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 2 READ ON UNIT 1 USING FORMAT: *(31I2)
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 3 READ ON UNIT 1 USING FORMAT: *(31I2)
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 4 READ ON UNIT 1 USING FORMAT: *(31I2)
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 5 READ ON UNIT 1 USING FORMAT: *(31I2)
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 6 READ ON UNIT 1 USING FORMAT: *(31I2)
-----

```

HEAD AT INACTIVE CELLS = 999.0000

```

-----
STARTING HYDRAULIC HEADS FOR LAYER 1 READ ON UNIT 1 USING FORMAT: *(20F4.1)
-----
STARTING HYDRAULIC HEADS FOR LAYER 2 READ ON UNIT 1 USING FORMAT: *(20F4.1)
-----
STARTING HYDRAULIC HEADS FOR LAYER 3 READ ON UNIT 1 USING FORMAT: *(20F4.1)
-----
STARTING HYDRAULIC HEADS FOR LAYER 4 READ ON UNIT 1 USING FORMAT: *(20F4.1)
-----
STARTING HYDRAULIC HEADS FOR LAYER 5 READ ON UNIT 1 USING FORMAT: *(20F4.1)
-----
STARTING HYDRAULIC HEADS FOR LAYER 6 READ ON UNIT 1 USING FORMAT: *(20F4.1)
-----

```

LAYER NUMBER	AQUIPER TYPE
1	1
2	3
3	3
4	0
5	0
6	0

ANISOTROPY RATIO (Ky/Kx) = 1.000000

WIDTH ALONG ROWS (DELR) READ ON UNIT 11 USING FORMAT: *(10f8.2)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31									

1	10.00	10.00	10.00	10.00	10.00	5.000	4.000	3.000	2.000	1.000
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	1.000	1.000	2.000	3.000	4.000	5.000	10.00	10.00	10.00	10.00
	10.00									

WIDTH ALONG COL. (DELC) READ ON UNIT 11 USING FORMAT: *(10f8.2)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21									

1	10.00	10.00	10.00	10.00	10.00	5.000	4.000	3.000	2.000	1.000
	1.000	1.000	2.000	3.000	4.000	5.000	10.00	10.00	10.00	10.00
	10.00									

```

HY. COND. ALONG ROW (Kx) = 100.0000 FOR LAYER 1
BOT (NOT USED BY PATH3D) = 89.00000 FOR LAYER 1
VERT. HYD. COND./THICK. = 100.0000 FOR LAYER 1
HY. COND. ALONG ROW (Kx) = 100.0000 FOR LAYER 2
BOT (NOT USED BY PATH3D) = 88.00000 FOR LAYER 2

```

VERT. HYD. COND./THICK.	=	66.67000	FOR LAYER	2
TOP (NOT USED BY PATH3D)	=	89.00000	FOR LAYER	2
HY. COND. ALONG ROW (Kx)	=	100.00000	FOR LAYER	3
BOT (NOT USED BY PATH3D)	=	86.00000	FOR LAYER	3
VERT. HYD. COND./THICK.	=	33.33000	FOR LAYER	3
TOP (NOT USED BY PATH3D)	=	88.00000	FOR LAYER	3
TRANS. ALONG ROWS (Tx)	=	400.00000	FOR LAYER	4
VERT. HYD. COND./THICK.	=	20.00000	FOR LAYER	4
TRANS. ALONG ROWS (Tx)	=	600.00000	FOR LAYER	5
VERT. HYD. COND./THICK.	=	12.50000	FOR LAYER	5
TRANS. ALONG ROWS (Tx)	=	1000.000	FOR LAYER	6
TOP ELEV. OF 1ST LAYER	=	90.00000	FOR LAYER	1
CELL THICKNESS (DZ)	=	1.000000	FOR LAYER	1
CELL THICKNESS (DZ)	=	1.000000	FOR LAYER	2
CELL THICKNESS (DZ)	=	2.000000	FOR LAYER	3
CELL THICKNESS (DZ)	=	4.000000	FOR LAYER	4
CELL THICKNESS (DZ)	=	6.000000	FOR LAYER	5
CELL THICKNESS (DZ)	=	10.00000	FOR LAYER	6
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER	1
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER	2
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER	3
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER	4
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER	5
POROSITY*RETARD. FACTOR	=	.2000000	FOR LAYER	6

TRACKING START TIME (TIME1) = .0000000
 TRACKING END TIME (TIME2) = .1000000E+11
 ERROR CRITERION (EPS) = .1000000E-03
 INITIAL TRACKING STEPSIZE = 1.000000
 MAXIMUM TRACKING STEPS ALLOWED = 100
 INTERVAL FOR SAVING INTERMEDIATE RESULTS = 1
 OPTION FOR PRINTING INTERMEDIATE RESULTS = 3

PARTICLE STARTING POSITIONS			
PARTICLE NO.	X	Y	Z
1	65.000	65.000	.50000
2	65.000	65.500	.50000
3	65.000	66.000	.50000
4	65.500	66.000	.50000
5	66.000	66.000	.50000
6	66.000	65.500	.50000
7	66.000	65.000	.50000
8	65.500	65.000	.50000

STRESS PERIOD NO. 1

NUMBER OF WELLS IN CURRENT STRESS PERIOD = 2

WELL NO.	LAYER	ROW	COLUMN	Q
1	1	11	11	50.00000
2	1	11	21	-50.00000

TIME STEP NO. 1

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

=====

PARTICLE COORDINATES, TRAVEL TIMES, AND NODAL INDICES

=====

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.00000	65.00000	.5000000	.0000000	10	10	1	
64.20226	64.02744	.8654167	.9348894E-01	10	10	1	
64.17792	63.99555	.8851138	.9719577E-01	10	9	1	
64.17711	63.96373	.8902552	.1009392	10	9	1	
64.17382	63.83978	.9112105	.1159130	10	9	1	
64.16306	63.40558	1.001596	.1758082	10	9	2	
64.18436	63.17899	1.089764	.2302078	10	9	2	
64.28155	62.43114	1.467020	.4478060	10	9	2	
64.34076	62.12507	1.680234	.5612052	10	9	2	
64.36442	62.02362	1.762437	.6032887	10	9	2	
64.37205	61.99725	1.783583	.6146622	10	8	2	
64.39233	61.97129	1.788596	.6259665	10	8	2	
64.47414	61.86897	1.808766	.6711841	10	8	2	
64.81299	61.48265	1.891386	.8520544	10	8	2	
65.32504	60.98140	2.017709	1.106296	11	8	3	
65.84249	60.71791	2.140883	1.342274	11	8	3	
67.15090	60.23089	2.393428	1.882776	13	8	3	
67.96703	60.03004	2.508622	2.192687	13	8	3	
71.45053	59.77498	2.678719	3.432329	17	8	3	
75.00349	60.64864	2.248181	4.779191	21	8	3	
75.83800	61.08912	2.065794	5.158203	21	8	3	
76.00000	61.18444	2.028617	5.235746	21	8	3	
76.12223	61.25963	2.000000	5.295527	22	8	2	
76.86407	62.00000	1.830695	5.673768	22	8	2	
77.00000	62.18431	1.798540	5.752205	22	9	2	
77.07902	63.29651	1.000000	6.172076	23	9	1	
77.00000	63.87902	.8452989	6.435413	22	9	1	
76.99518	64.00000	.8297523	6.449997	22	9	1	
76.95747	65.00000	.7099836	6.565615	22	10	1	
76.46947	66.00000	.4596393	6.639086	22	11	1	
76.00000	65.86047	.4953232	6.649337	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.00000	65.50000	.5000000	.0000000	10	11	1	
64.00000	65.50000	.6146432	.1945843E-01	9	11	1	
62.96880	65.50000	.7539326	.1218926	9	11	1	
62.33201	65.50000	.9871527	.2467321	9	11	1	
62.18116	65.50000	1.236517	.3562740	9	11	2	

62.08704	65.50000	1.468907	.4552243	9	11	2
62.02376	65.50000	1.668633	.5380644	9	11	2
62.00352	65.50000	1.743133	.5684638	9	11	2
61.99945	65.50000	1.757914	.5748621	8	11	2
61.99516	65.50000	1.761251	.5816522	8	11	2
61.97817	65.50000	1.774651	.6088127	8	11	2
61.91286	65.50000	1.829099	.7174546	8	11	2
61.77426	65.50000	1.963116	.9738309	8	11	2
61.73843	65.50000	2.011513	1.062850	8	11	3
61.79366	65.50000	2.060426	1.152187	8	11	3
61.89655	65.50000	2.154804	1.324121	8	11	3
61.95604	65.50000	2.211429	1.427001	8	11	3
61.98788	65.50000	2.242387	1.483160	8	11	3
61.99884	65.50000	2.253151	1.502671	8	11	3
62.00700	65.50000	2.285930	1.517255	9	11	3
62.01442	65.50000	2.317550	1.530577	9	11	3
62.04381	65.50000	2.441790	1.583866	9	11	3
62.15696	65.50000	2.904655	1.797022	9	11	3
62.41930	65.50000	3.882753	2.348458	9	11	3
62.46438	65.50000	4.009841	2.433769	9	11	4
62.60448	65.50000	4.131925	2.518367	9	11	4
63.17522	65.50000	4.595219	2.856761	9	11	4
63.73280	65.50000	5.000241	3.178053	9	11	4
63.94377	65.50000	5.142509	3.297332	9	11	4
64.00438	65.50000	5.184063	3.331374	10	11	4
64.06219	65.50000	5.242242	3.363659	10	11	4
64.29786	65.50000	5.466494	3.492797	10	11	4
64.86511	65.50000	5.932304	3.788434	10	11	4
65.01262	65.50000	6.039870	3.862056	11	11	4
65.16879	65.50000	6.160471	3.938398	11	11	4
65.83112	65.50000	6.594556	4.243765	11	11	4
66.04755	65.50000	6.712466	4.337692	12	11	4
66.26744	65.50000	6.808156	4.430854	12	11	4
66.94202	65.50000	7.066937	4.704481	12	11	4
67.27511	65.50000	7.153043	4.833821	13	11	4
67.58188	65.50000	7.226012	4.950758	13	11	4
67.98486	65.50000	7.316190	5.101342	13	11	4
68.35062	65.50000	7.369429	5.235759	14	11	4
68.68954	65.50000	7.415268	5.359092	14	11	4
70.06990	65.50000	7.504878	5.852426	16	11	4
70.92061	65.50000	7.506749	6.153586	16	11	4
74.21371	65.50000	7.028503	7.358229	20	11	4
74.82854	65.50000	6.779754	7.607734	20	11	4
75.00680	65.50000	6.697344	7.682961	21	11	4
75.18041	65.50000	6.595464	7.757872	21	11	4
75.83189	65.50000	6.137503	8.057519	21	11	4
76.04013	65.50000	5.962150	8.160167	22	11	4
76.22673	65.50000	5.813978	8.254672	22	11	4
76.93238	65.50000	5.146896	8.632691	22	11	4
76.99642	65.50000	5.076509	8.668747	22	11	4
77.06026	65.50000	5.030256	8.704914	23	11	4
77.11804	65.50000	4.989843	8.737744	23	11	4
77.34760	65.50000	4.824727	8.869066	23	11	4
78.24108	65.50000	4.105402	9.394353	23	11	4
78.36406	65.50000	3.988047	9.473672	23	11	3
78.38470	65.50000	3.869159	9.551473	23	11	3
78.47366	65.50000	3.342762	9.862677	23	11	3
78.59691	65.50000	2.577401	10.24108	23	11	3
78.68755	65.50000	2.000000	10.50036	23	11	2
78.05954	65.50000	1.000000	10.89633	23	11	1
77.00000	65.50000	.7198951	11.03781	22	11	1
76.33099	65.50000	.3481064	11.08438	22	11	1
75.78062	65.50000	.4953232	11.09366	21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.00000	66.00000	.5000000	.0000000		10	11	1
64.94949	66.04700	.5111867	.3830708E-02		10	12	1
64.91502	66.08941	.5208079	.7334784E-02		10	12	1
64.78173	66.25316	.5620493	.2132332E-01		10	12	1
64.31239	66.82767	.7826321	.7727745E-01		10	12	1
64.20211	66.96213	.8608345	.9228794E-01		10	12	1
64.17163	67.00225	.8854699	.9691839E-01		10	13	1
64.17062	67.04038	.8916406	.1014256		10	13	1
64.16658	67.18784	.9168347	.1193391		10	13	1
64.15472	67.64120	1.013592	.1827811		10	13	2
64.17672	67.87560	1.106826	.2400537		10	13	2
64.27775	68.64162	1.507188	.4691442		10	13	2
64.32584	68.88889	1.684333	.5628096		10	13	2
64.34705	68.98195	1.760150	.6016148		10	13	2
64.35361	69.00516	1.778772	.6116394		10	14	2
64.37189	69.02863	1.783293	.6218598		10	14	2
64.44546	69.12112	1.801438	.6626601		10	14	2
64.74907	69.47227	1.875593	.8258614		10	14	2
65.18267	69.92224	1.982533	1.045260		11	14	2
65.55978	70.13773	2.074771	1.222196		11	14	3
65.91988	70.31454	2.158983	1.383442		11	14	3
66.83194	70.66755	2.339246	1.764651		12	14	3
67.53828	70.85489	2.442633	2.039215		13	14	3
68.01585	70.96664	2.507255	2.218171		14	14	3
68.48440	71.03900	2.550898	2.389838		14	14	3
68.98209	71.11304	2.596611	2.569043		14	14	3
69.63743	71.16438	2.630408	2.801705		15	14	3
70.08256	71.19374	2.650322	2.958461		16	14	3
70.52134	71.19405	2.653139	3.112587		16	14	3
71.01219	71.19170	2.654726	3.284898		17	14	3
71.48552	71.15838	2.638392	3.451613		17	14	3
71.98518	71.12260	2.621077	3.628880		17	14	3
73.06852	70.95868	2.536315	4.021011		19	14	3
73.94902	70.73807	2.426325	4.354586		19	14	3
75.20715	70.25223	2.205560	4.875182		21	14	3
75.99010	69.81922	2.030849	5.238819		21	14	3
76.00000	69.81315	2.028535	5.243652		21	14	3

76.12189	69.73813	2.000000	5.303263	22	14	2
76.86140	69.00000	1.831234	5.680298	22	13	2
77.00000	67.99043	1.004790	6.110210	22	13	2
77.00066	67.97651	1.000000	6.113699	23	13	1
77.00000	67.97231	.9988196	6.115709	22	13	1
76.94466	67.00000	.7699614	6.283103	22	12	1
76.17947	66.01233	.3208847	6.397295	22	12	1
76.16237	65.99619	.3481064	6.398484	22	11	1
76.07584	65.97894	.3481064	6.399785	22	11	1
75.77354	65.72813	.4953232	6.404977	21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.50000	66.00000	.5000000	.0000000	11	11	1	
65.50318	66.06504	.5094451	.1240887E-02	11	12	1	
65.50615	66.12170	.5163130	.2371791E-02	11	12	1	
65.51890	66.32549	.5451456	.6895408E-02	11	12	1	
65.58727	66.86569	.6854676	.2498988E-01	11	12	1	
65.61942	66.98206	.7454490	.3129623E-01	11	12	1	
65.62666	67.00346	.7581707	.3263969E-01	11	13	1	
65.63064	67.02599	.7604301	.3408769E-01	11	13	1	
65.64677	67.11413	.7695601	.3987970E-01	11	13	1	
65.71470	67.43701	.8075998	.6304774E-01	11	13	1	
65.96323	68.18890	.9420758	.1346505	11	13	1	
66.12160	68.37971	1.003149	.1739117	12	13	2	
66.24899	68.48808	1.059666	.2097919	12	13	2	
66.80177	68.87047	1.295174	.3530284	12	13	2	
66.99087	68.97554	1.372464	.3979809	12	13	2	
67.13648	69.05189	1.397001	.4446221	13	14	2	
67.27161	69.12884	1.410260	.4939831	13	14	2	
67.82420	69.42396	1.464324	.6914270	13	14	2	
69.20170	69.83008	1.553987	1.162140	15	14	2	
69.99337	69.93261	1.582165	1.426388	15	14	2	
73.13766	69.49653	1.513774	2.483377	19	14	2	
74.00000	69.07201	1.443372	2.783774	19	14	2	
74.12545	69.00000	1.433089	2.829963	20	13	2	
75.00000	68.53940	1.109927	3.034199	20	13	2	
75.28080	68.30090	1.000000	3.114471	21	13	1	
75.79541	67.00000	.6835161	3.278757	21	12	1	
75.53704	66.22054	.3429565	3.326298	21	12	1	
75.52958	65.67347	.4953232	3.336459	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
66.00000	66.00000	.5000000	.0000000	11	11	1	
66.01913	66.01588	.5046359	.1045172E-02	12	12	1	
66.03354	66.02732	.5070679	.2004980E-02	12	12	1	
66.09071	66.07266	.5169829	.5844211E-02	12	12	1	
66.31158	66.24738	.5597125	.2117071E-01	12	12	1	
66.81365	66.64149	.6916249	.5932641E-01	12	12	1	
66.97267	66.76537	.7473883	.7252959E-01	12	12	1	
67.08091	66.81261	.7706530	.8187617E-01	13	12	1	
67.17715	66.84417	.7865731	.9046476E-01	13	12	1	
67.53310	66.97235	.8549001	.1248191	13	12	1	
67.61341	67.00537	.8725410	.1335369	13	13	1	
67.65880	67.04054	.8796846	.1428538	13	13	1	
67.83981	67.17811	.9090505	.1801217	13	13	1	
68.04008	67.31928	.9419771	.2215621	14	13	1	
68.24000	67.38535	.9611005	.2633618	14	13	1	
68.98461	67.61158	1.042099	.4302292	14	13	2	
69.40176	67.66700	1.067471	.5286390	15	13	2	
69.77916	67.71268	1.089109	.6186371	15	13	2	
71.27131	67.71603	1.104159	.9779162	17	13	2	
71.93966	67.63853	1.080145	1.136052	17	13	2	
72.44047	67.50449	1.037418	1.252276	18	13	2	
72.90798	67.37210	.9980411	1.358075	18	13	1	
73.28366	67.11515	.9456347	1.435955	19	13	1	
73.42408	67.01077	.9264603	1.464821	19	13	1	
73.65320	66.92394	.8854475	1.488589	19	12	1	
73.88987	66.84595	.8485733	1.510238	19	12	1	
74.01121	66.80421	.8294755	1.520666	20	12	1	
74.12601	66.71552	.7908922	1.530125	20	12	1	
74.63754	66.31876	.6631785	1.567962	20	12	1	
74.86018	66.14531	.6234152	1.582606	20	12	1	
74.98423	66.04848	.6041983	1.590364	20	12	1	
75.00176	66.02966	.6013735	1.591439	21	12	1	
75.04697	65.96234	.5915335	1.592348	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
66.00000	65.50000	.5000000	.0000000	11	11	1	
66.06837	65.50000	.5091043	.1231558E-02	12	11	1	
66.12806	65.50000	.5156416	.2353367E-02	12	11	1	
66.34400	65.50000	.5430463	.6840605E-02	12	11	1	
66.92921	65.50000	.6756257	.2478956E-01	12	11	1	
67.01383	65.50000	.7081760	.2870383E-01	13	11	1	
67.08609	65.50000	.7173000	.3230425E-01	13	11	1	
67.34941	65.50000	.7554753	.4670591E-01	13	11	1	
67.87820	65.50000	.8696525	.8448779E-01	13	11	1	
68.00542	65.50000	.9079598	.9633590E-01	14	11	1	
68.11226	65.50000	.9207676	.1070877	14	11	1	
68.50226	65.50000	.9744415	.1500950	14	11	1	
68.78186	65.50000	1.026854	.1894954	14	11	2	
68.98582	65.50000	1.072694	.2232827	14	11	2	
69.17158	65.50000	1.090730	.2553587	15	11	2	
69.33599	65.50000	1.105158	.2843523	15	11	2	
69.96204	65.50000	1.163768	.4003265	15	11	2	
71.10478	65.50000	1.178590	.6212217	17	11	2	
71.86366	65.50000	1.130369	.7586830	17	11	2	
72.00272	65.50000	1.120819	.7824279	18	11	2	
72.14457	65.50000	1.095169	.8059023	18	11	2	

72.70145	65.50000	1.006797	.8891608	18	11	2
72.74880	65.50000	1.000000	.8957124	18	11	1
73.00000	65.50000	.9717933	.9229973	18	11	1
74.00000	65.50000	.8731222	1.022294	19	11	1
75.00000	65.50000	.7478607	1.068341	20	11	1
76.00000	65.50000	.6445056	1.080905	21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
66.00000	65.00000	.5000000	.0000000		11	10	1
66.05647	64.94314	.5105182	.3763665E-02		12	10	1
66.10685	64.90334	.5193737	.7162138E-02		12	10	1
66.30259	64.74905	.5572806	.2075603E-01		12	10	1
66.76853	64.38438	.6765347	.5591179E-01		12	10	1
66.96517	64.23164	.7437507	.7211855E-01		12	10	1
67.03437	64.19103	.7637681	.7804342E-01		13	10	1
67.10203	64.16931	.7745599	.8396348E-01		13	10	1
67.35793	64.08170	.8197762	.1075968		13	10	1
67.56156	64.00491	.8616904	.1279896		13	10	1
67.66460	63.93087	.8787571	.1476530		13	9	1
67.75130	63.86488	.8926359	.1654939		13	9	1
68.00257	63.68678	.9331764	.2174351		14	9	1
68.24319	63.60740	.9561397	.2677203		14	9	1
68.94968	63.38786	1.032139	.4241952		14	9	2
69.35474	63.33411	1.056616	.5196434		15	9	2
69.72300	63.28959	1.077555	.6073397		15	9	2
71.17965	63.28649	1.092361	.9581249		17	9	2
71.85152	63.36462	1.069004	1.117520		17	9	2
72.02477	63.38683	1.062382	1.158106		18	9	2
72.21909	63.44138	1.044994	1.203327		18	9	2
72.82949	63.61444	.9932172	1.342301		18	9	1
73.03118	63.68382	.9769449	1.384417		19	9	1
73.24039	63.83323	.9470515	1.427724		19	9	1
73.45684	63.99316	.9176584	1.472228		19	9	1
73.69959	64.08372	.8754902	1.497041		19	10	1
73.95005	64.16460	.8378756	1.519525		19	10	1
74.00812	64.18436	.8289174	1.524468		20	10	1
74.07065	64.23242	.8073276	1.529676		20	10	1
74.33602	64.43684	.7295889	1.550510		20	10	1
74.85242	64.83656	.6236763	1.586174		20	10	1
74.95914	64.91947	.6069812	1.592879		20	10	1
74.99841	64.94999	.6011859	1.595296		20	10	1
75.09777	65.08591	.5803196	1.597342		21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.50000	65.00000	.5000000	.0000000		11	10	1
65.56042	64.27811	.6300079	.1883855E-01		11	10	1
65.60308	64.07108	.7121251	.2822724E-01		11	10	1
65.62432	64.00364	.7508795	.3218593E-01		11	10	1
65.63333	63.95666	.7575827	.3520977E-01		11	9	1
65.64104	63.91435	.7619143	.3798353E-01		11	9	1
65.67265	63.75214	.7795813	.4907856E-01		11	9	1
65.81217	63.20308	.8560126	.9345871E-01		11	9	1
65.97562	62.78391	.9427776	.1379368		11	9	1
66.13581	62.59465	1.004408	.1775093		12	9	2
66.26454	62.48688	1.061322	.2136257		12	9	2
66.82461	62.10627	1.299040	.3580914		12	9	2
66.99149	62.01474	1.367055	.3976578		12	9	2
67.09586	61.96002	1.384562	.4311306		13	8	2
67.19916	61.90077	1.394600	.4689973		13	8	2
67.61957	61.67131	1.435373	.6204643		13	8	2
69.39164	61.14454	1.549606	1.226332		15	8	2
70.03436	61.06786	1.570964	1.440776		16	8	2
70.66975	61.06588	1.575454	1.651964		16	8	2
72.20622	61.25838	1.542867	2.164700		18	8	2
72.97340	61.47811	1.504376	2.426565		18	8	2
73.00000	61.48601	1.503046	2.435746		18	8	2
74.00000	61.78383	1.453079	2.781127		19	8	2
74.22878	61.96644	1.427816	2.866473		20	8	2
74.27013	62.00013	1.421840	2.881471		20	9	2
74.33054	62.03354	1.398887	2.896116		20	9	2
74.56441	62.17505	1.309258	2.954695		20	9	2
74.95399	62.46323	1.157041	3.059671		20	9	2
75.00000	62.50190	1.138838	3.072669		20	9	2
75.34978	62.80541	1.000000	3.172663		21	9	1
75.75040	64.00000	.7327593	3.311387		21	9	1
75.83995	65.00000	.6597240	3.372379		21	10	1
75.75261	66.00000	.5722629	3.385505		21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

>>ALL PARTICLES HAVE ALREADY BEEN REMOVED

Output for example 3 from RFP implementation of PATH3D

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*****
+
+           P A T H 3 D
+   A Ground-Water Path and Travel-Time Simulator
+           (V. 3.20)
+
*****

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EXAMPLE 3:
 3-D WITH INJECTION AND PUMPING WELLS
 FLOW MODEL CONSISTS OF 6 LAYERS 21 ROWS 31 COLUMNS
 NUMBER OF STRESS PERIOD(S) IN SIMULATION = 1
 TIME UNIT USED IN THE MODEL IS DAYS
 PACKAGE: BCF WEL DRN RIV EVT GHB RCH STR
 UNIT: 11 12 0 0 0 0 0 0 0
 Enter Name for BCF Package Input File:
 FLOW FIELD IS STEADY-STATE (ISS NOT 0)
 WETTING CAPABILITY IS NOT ACTIVE
 HEAD AT CELLS THAT CONVERT TO DRY= .00000E+00
 Enter Name for WEL Package Input File:
 MAXIMUM NUMBER OF WELLS = 2
 MAXIMUM NUMBER OF PARTICLES ALLOWED = 8
 FILE (P3DPLT.DAT) SAVED IN UNIT 4 FOR PLOTTING PATH LINES
 INITIAL PARTICLE POSITIONS ARE ENTERED IN X, Y, Z COORDINATES
 PARTICLE REMOVAL OPTION (1) IS SELECTED
 40841 ELEMENTS OF THE Y ARRAY USED OUT OF 800000

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BOUNDARY ARRAY (IBOUND) FOR LAYER 1 READ ON UNIT 1 USING FORMAT: "(31I2)"
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 2 READ ON UNIT 1 USING FORMAT: "(31I2)"
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 3 READ ON UNIT 1 USING FORMAT: "(31I2)"
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 4 READ ON UNIT 1 USING FORMAT: "(31I2)"
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 5 READ ON UNIT 1 USING FORMAT: "(31I2)"
-----
BOUNDARY ARRAY (IBOUND) FOR LAYER 6 READ ON UNIT 1 USING FORMAT: "(31I2)"
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HEAD AT INACTIVE CELLS = 999.0000

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STARTING HYDRAULIC HEADS FOR LAYER 1 READ ON UNIT 1 USING FORMAT: "(20F4.1)"
-----
STARTING HYDRAULIC HEADS FOR LAYER 2 READ ON UNIT 1 USING FORMAT: "(20F4.1)"
-----
STARTING HYDRAULIC HEADS FOR LAYER 3 READ ON UNIT 1 USING FORMAT: "(20F4.1)"
-----
STARTING HYDRAULIC HEADS FOR LAYER 4 READ ON UNIT 1 USING FORMAT: "(20F4.1)"
-----
STARTING HYDRAULIC HEADS FOR LAYER 5 READ ON UNIT 1 USING FORMAT: "(20F4.1)"
-----
STARTING HYDRAULIC HEADS FOR LAYER 6 READ ON UNIT 1 USING FORMAT: "(20F4.1)"
-----

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LAYER NUMBER	AQUIFER TYPE
1	1
2	3
3	3
4	0
5	0
6	0

ANISOTROPY RATIO (Ky/Kx) = 1.000000

WIDTH ALONG ROWS (DELR) READ ON UNIT 11 USING FORMAT: "(10f8.2)"

	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	21
21	22	23	24	25	26	27	28	29	30	31
1	10.00	10.00	10.00	10.00	10.00	5.000	4.000	3.000	2.000	1.000
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	1.000	1.000	2.000	3.000	4.000	5.000	10.00	10.00	10.00	10.00
	10.00									

WIDTH ALONG COL. (DELC) READ ON UNIT 11 USING FORMAT: "(10f8.2)"

	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	21
21										
1	10.00	10.00	10.00	10.00	10.00	5.000	4.000	3.000	2.000	1.000
	1.000	1.000	2.000	3.000	4.000	5.000	10.00	10.00	10.00	10.00

10.00

HY. COND. ALONG ROW (Kx) =	100.0000	FOR LAYER 1
BOT (NOT USED BY PATH3D) =	89.00000	FOR LAYER 1
VERT. HYD. COND./THICK. =	100.0000	FOR LAYER 1
HY. COND. ALONG ROW (Kx) =	100.0000	FOR LAYER 2
BOT (NOT USED BY PATH3D) =	88.00000	FOR LAYER 2
VERT. HYD. COND./THICK. =	66.67000	FOR LAYER 2
TOP (NOT USED BY PATH3D) =	89.00000	FOR LAYER 2
HY. COND. ALONG ROW (Kx) =	100.0000	FOR LAYER 3
BOT (NOT USED BY PATH3D) =	86.00000	FOR LAYER 3
VERT. HYD. COND./THICK. =	33.33000	FOR LAYER 3
TOP (NOT USED BY PATH3D) =	88.00000	FOR LAYER 3
TRANS. ALONG ROWS (Tx) =	400.0000	FOR LAYER 4
VERT. HYD. COND./THICK. =	20.00000	FOR LAYER 4
TRANS. ALONG ROWS (Tx) =	600.0000	FOR LAYER 5
VERT. HYD. COND./THICK. =	12.50000	FOR LAYER 5
TRANS. ALONG ROWS (Tx) =	1000.000	FOR LAYER 6
TOP ELEV. OF 1ST LAYER =	90.00000	FOR LAYER 1
CELL THICKNESS (DZ) =	1.000000	FOR LAYER 1
CELL THICKNESS (DZ) =	1.000000	FOR LAYER 2
CELL THICKNESS (DZ) =	2.000000	FOR LAYER 3
CELL THICKNESS (DZ) =	4.000000	FOR LAYER 4
CELL THICKNESS (DZ) =	6.000000	FOR LAYER 5
CELL THICKNESS (DZ) =	10.00000	FOR LAYER 6
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 1
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 2
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 3
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 4
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 5
POROSITY*RETARD. FACTOR =	.2000000	FOR LAYER 6

TRACKING START TIME (TIME1) = .0000000E+00
 TRACKING END TIME (TIME2) = .1000000E+11
 ERROR CRITERION (EPS) = .1000000E-03
 INITIAL TRACKING STEPS = 1.000000
 MAXIMUM TRACKING STEPS ALLOWED = 100
 INTERVAL FOR SAVING INTERMEDIATE RESULTS = 1
 OPTION FOR PRINTING INTERMEDIATE RESULTS = 3

PARTICLE STARTING POSITIONS				
PARTICLE NO.	X	Y	Z	
1	65.000	65.000	.50000	
2	65.000	65.500	.50000	
3	65.000	66.000	.50000	
4	65.500	66.000	.50000	
5	66.000	66.000	.50000	
6	66.000	65.500	.50000	
7	66.000	65.000	.50000	
8	65.500	65.000	.50000	

STRESS PERIOD NO. 1

STRESS PERIOD NO. 1

NUMBER OF WELLS IN CURRENT STRESS PERIOD = 2
 WELL NO. LAYER ROW COLUMN Q
 1 1 11 11 50.00000
 2 1 11 21 -50.00000

TIME STEP NO. 1

TIME STEP NO. 1

HEADS FOR CURRENT TIME STEP READ UNFORMATTED ON UNIT 3

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PARTICLE COORDINATES, TRAVEL TIMES, AND NODAL INDICES

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*Particle No. 1 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.00000	65.00000	.5000000	.0000000E+00	10	10	1	
64.20226	64.02744	.8654167	.9348894E-01	10	10	1	
64.17792	63.99555	.8851138	.9719577E-01	10	9	1	
64.17711	63.96373	.8902552	.1009392	10	9	1	
64.17382	63.83978	.9112105	.1159130	10	9	1	
64.16306	63.40558	1.001596	.1758082	10	9	2	
64.18436	63.17899	1.089764	.2302078	10	9	2	
64.28155	62.43114	1.467020	.4478060	10	9	2	
64.34076	62.12507	1.680234	.5612052	10	9	2	
64.36442	62.02362	1.762437	.6032887	10	9	2	
64.37205	61.99725	1.783583	.6146622	10	8	2	
64.39233	61.97129	1.788596	.6259665	10	8	2	
64.47414	61.86897	1.808766	.6711841	10	8	2	
64.81299	61.48265	1.891386	.8520544	10	8	2	
65.32504	60.98140	2.017709	1.106296	11	8	3	
65.84249	60.71791	2.140883	1.342274	11	8	3	
67.15090	60.23089	2.393428	1.882776	13	8	3	
67.96703	60.03004	2.508622	2.192687	13	8	3	
71.45053	59.77498	2.678719	3.432329	17	8	3	
75.00349	60.64864	2.248181	4.779191	21	8	3	
75.83800	61.08912	2.065794	5.158203	21	8	3	
76.00000	61.18444	2.028617	5.235746	21	8	3	
76.12223	61.25963	2.000000	5.295527	22	8	2	
76.86407	62.00000	1.830695	5.673768	22	8	2	
77.00000	62.18431	1.798540	5.752205	22	9	2	
77.07902	63.29651	1.000000	6.172076	23	9	1	
77.00000	63.87902	.8452989	6.435413	22	9	1	

76.99518	64.00000	.8297523	6.449997	22	9	1
76.95747	65.00000	.7099836	6.565615	22	10	1
76.46947	66.00000	.4596393	6.639086	22	11	1
76.00000	65.86047	.4953232	6.649337	21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
 +Particle No. 2 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.00000	65.50000	.5000000	.0000000E+00	10	11	1	
64.00000	65.50000	.6146432	.1945843E-01	9	11	1	
62.96880	65.50000	.7539326	.1218926	9	11	1	
62.33201	65.50000	.9871527	.2467321	9	11	1	
62.18116	65.50000	1.236517	.3562740	9	11	2	
62.08704	65.50000	1.468907	.4552243	9	11	2	
62.02376	65.50000	1.668633	.5380644	9	11	2	
62.00352	65.50000	1.743133	.5684638	9	11	2	
61.99945	65.50000	1.757914	.5748621	8	11	2	
61.99516	65.50000	1.761251	.5816522	8	11	2	
61.97817	65.50000	1.774651	.6088127	8	11	2	
61.91286	65.50000	1.829099	.7174546	8	11	2	
61.77426	65.50000	1.963116	.9738309	8	11	2	
61.73843	65.50000	2.011513	1.062850	8	11	3	
61.79366	65.50000	2.060426	1.152187	8	11	3	
61.89655	65.50000	2.154804	1.324121	8	11	3	
61.95604	65.50000	2.211429	1.427001	8	11	3	
61.98788	65.50000	2.242387	1.483160	8	11	3	
61.99884	65.50000	2.253151	1.502671	8	11	3	
62.00700	65.50000	2.285930	1.517255	9	11	3	
62.01442	65.50000	2.317550	1.530577	9	11	3	
62.04381	65.50000	2.441790	1.583866	9	11	3	
62.15696	65.50000	2.904655	1.797022	9	11	3	
62.41930	65.50000	3.882753	2.348458	9	11	3	
62.46438	65.50000	4.009841	2.433769	9	11	4	
62.60448	65.50000	4.131925	2.518367	9	11	4	
63.17522	65.50000	4.595219	2.856761	9	11	4	
63.73280	65.50000	5.000241	3.178053	9	11	4	
63.94377	65.50000	5.142509	3.297332	9	11	4	
64.00438	65.50000	5.184063	3.331374	10	11	4	
64.06219	65.50000	5.242242	3.363659	10	11	4	
64.29786	65.50000	5.466494	3.492797	10	11	4	
64.86511	65.50000	5.932304	3.788434	10	11	4	
65.01262	65.50000	6.039870	3.862056	11	11	4	
65.16879	65.50000	6.160471	3.938398	11	11	4	
65.83112	65.50000	6.594556	4.243765	11	11	4	
66.04755	65.50000	6.712466	4.337692	12	11	4	
66.26744	65.50000	6.808156	4.430854	12	11	4	
66.94202	65.50000	7.066937	4.704481	12	11	4	
67.27511	65.50000	7.153043	4.833821	13	11	4	
67.58188	65.50000	7.226012	4.950758	13	11	4	
67.98486	65.50000	7.316190	5.101342	13	11	4	
68.35062	65.50000	7.369429	5.235759	14	11	4	
68.68954	65.50000	7.415268	5.359092	14	11	4	
70.06990	65.50000	7.504878	5.852426	16	11	4	
70.92061	65.50000	7.506749	6.153586	16	11	4	
74.21371	65.50000	7.028503	7.358229	20	11	4	
74.82854	65.50000	6.779754	7.607734	20	11	4	
75.00680	65.50000	6.697344	7.682961	21	11	4	
75.18041	65.50000	6.595464	7.757872	21	11	4	
75.83189	65.50000	6.137503	8.057519	21	11	4	
76.04013	65.50000	5.962150	8.160167	22	11	4	
76.22673	65.50000	5.813978	8.254672	22	11	4	
76.93238	65.50000	5.146896	8.632691	22	11	4	
76.99642	65.50000	5.076509	8.668747	22	11	4	
77.06026	65.50000	5.030256	8.704914	23	11	4	
77.11804	65.50000	4.989843	8.737744	23	11	4	
77.34760	65.50000	4.824727	8.869066	23	11	4	
78.24108	65.50000	4.105402	9.394353	23	11	4	
78.36406	65.50000	3.988047	9.473672	23	11	3	
78.38470	65.50000	3.869159	9.551473	23	11	3	
78.47366	65.50000	3.342762	9.862677	23	11	3	
78.59691	65.50000	2.577401	10.24108	23	11	3	
78.68755	65.50000	2.000000	10.50036	23	11	2	
78.05954	65.50000	1.000000	10.89633	23	11	1	
77.00000	65.50000	.7198951	11.03781	22	11	1	
76.33099	65.50000	.3481064	11.08438	22	11	1	
75.78062	65.50000	.4953232	11.09366	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
 +Particle No. 3 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.00000	66.00000	.5000000	.0000000E+00	10	11	1	
64.94949	66.04700	.5111867	.3830708E-02	10	12	1	
64.91502	66.08941	.5208079	.7334784E-02	10	12	1	
64.78173	66.25316	.5620493	.2132332E-01	10	12	1	
64.31239	66.82767	.7826321	.7727745E-01	10	12	1	
64.20211	66.96213	.8608345	.9228794E-01	10	12	1	
64.17163	67.00225	.8854699	.9693839E-01	10	13	1	
64.17062	67.04038	.8916406	.1014256	10	13	1	
64.16658	67.18784	.9168347	.1193391	10	13	1	
64.15472	67.64120	1.013592	.1827811	10	13	2	
64.17672	67.87560	1.106826	.2400537	10	13	2	
64.27775	68.64162	1.507188	.4691442	10	13	2	
64.32584	68.88889	1.684333	.5628096	10	13	2	
64.34705	68.98195	1.760150	.6016148	10	13	2	
64.35361	69.00516	1.778772	.6116394	10	14	2	
64.37189	69.02863	1.783293	.6218598	10	14	2	
64.44546	69.12112	1.801438	.6626601	10	14	2	
64.74907	69.47227	1.875593	.8258614	10	14	2	
65.18267	69.92224	1.982533	1.045260	11	14	2	
65.55978	70.13773	2.074771	1.222196	11	14	3	
65.91988	70.31454	2.158983	1.383442	11	14	3	
66.83194	70.66755	2.339246	1.764651	12	14	3	

67.53828	70.85489	2.442633	2.039215	13	14	3
68.01585	70.96664	2.507255	2.218171	14	14	3
68.48440	71.03900	2.550898	2.389838	14	14	3
68.98209	71.11304	2.596611	2.569043	14	14	3
69.63743	71.16438	2.630408	2.801705	15	14	3
70.08256	71.19374	2.650322	2.958461	16	14	3
70.52134	71.19405	2.653139	3.112587	16	14	3
71.01219	71.19170	2.654726	3.284898	17	14	3
71.48552	71.15838	2.638392	3.451613	17	14	3
71.98518	71.12260	2.621077	3.628880	17	14	3
73.06852	70.95868	2.536315	4.021011	19	14	3
73.94902	70.73807	2.426325	4.354586	19	14	3
75.20715	70.25223	2.205560	4.875182	21	14	3
75.99010	69.81922	2.030849	5.238819	21	14	3
76.00000	69.81315	2.028535	5.243652	21	14	3
76.12189	69.73813	2.000000	5.303263	22	14	2
76.86140	69.00000	1.831234	5.680298	22	13	2
77.00000	67.99043	1.004790	6.110210	22	13	2
77.00066	67.97651	1.000000	6.113699	23	13	1
77.00000	67.97231	.9988196	6.115709	22	13	1
76.94466	67.00000	.7699614	6.283103	22	12	1
76.17947	66.01233	.3208847	6.397295	22	12	1
76.16237	65.99619	.3481064	6.398484	22	11	1
76.07584	65.97894	.3481064	6.399785	22	11	1
75.77354	65.72813	.4953232	6.404977	21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
+Particle No. 4 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.50000	66.00000	.5000000	.0000000E+00	11	11	1	
65.50318	66.06504	.5094451	.1240887E-02	11	12	1	
65.50615	66.12170	.5163130	.2371791E-02	11	12	1	
65.51890	66.32549	.5451456	.6895408E-02	11	12	1	
65.58727	66.86569	.6854676	.2498988E-01	11	12	1	
65.61942	66.98206	.7454490	.3129623E-01	11	12	1	
65.62666	67.00346	.7581707	.3263969E-01	11	13	1	
65.63064	67.02599	.7604301	.3408769E-01	11	13	1	
65.64677	67.11413	.7695601	.3987970E-01	11	13	1	
65.71470	67.43701	.8075998	.6304774E-01	11	13	1	
65.96323	68.18890	.9420758	.1346505	11	13	1	
66.12160	68.37971	1.003149	.1739117	12	13	2	
66.24899	68.48808	1.059666	.2097919	12	13	2	
66.80177	68.87047	1.295174	.3530284	12	13	2	
66.99087	68.97554	1.372464	.3979809	12	13	2	
67.13648	69.05189	1.397001	.4446221	13	14	2	
67.27161	69.12884	1.410260	.4939831	13	14	2	
67.82420	69.42396	1.464324	.6914270	13	14	2	
69.20170	69.83008	1.553987	1.162140	15	14	2	
69.99337	69.93261	1.582165	1.426388	15	14	2	
73.13766	69.49653	1.513774	2.483377	19	14	2	
74.00000	69.07201	1.443372	2.783774	19	14	2	
74.12545	69.00000	1.433089	2.829963	20	13	2	
75.00000	68.53940	1.109927	3.034199	20	13	2	
75.28080	68.30090	1.000000	3.114471	21	13	1	
75.79541	67.00000	.6835161	3.278757	21	12	1	
75.53704	66.22054	.3429565	3.326298	21	12	1	
75.52958	65.67347	.4953232	3.336459	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
+Particle No. 5 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
66.00000	66.00000	.5000000	.0000000E+00	11	11	1	
66.01913	66.01588	.5046359	.1045172E-02	12	12	1	
66.03354	66.02732	.5070679	.2004980E-02	12	12	1	
66.09071	66.07266	.5169829	.5844211E-02	12	12	1	
66.31158	66.24738	.5597125	.2117071E-01	12	12	1	
66.81365	66.64149	.6916249	.5932641E-01	12	12	1	
66.97267	66.76537	.7473883	.7252959E-01	12	12	1	
67.08091	66.81261	.7706530	.8187617E-01	13	12	1	
67.17715	66.84417	.7865731	.9046476E-01	13	12	1	
67.53310	66.97235	.8549001	.1248191	13	12	1	
67.61341	67.00537	.8725410	.1335369	13	13	1	
67.65880	67.04054	.8796846	.1428538	13	13	1	
67.83981	67.17811	.9090505	.1801217	13	13	1	
68.04008	67.31928	.9419771	.2215621	14	13	1	
68.24000	67.38535	.9611005	.2633618	14	13	1	
68.98461	67.61158	1.042099	.4302292	14	13	2	
69.40176	67.66700	1.067471	.5286390	15	13	2	
69.77916	67.71268	1.089109	.6186371	15	13	2	
71.27131	67.71603	1.104159	.9779162	17	13	2	
71.93966	67.63853	1.080145	1.136052	17	13	2	
72.44047	67.50449	1.037418	1.252276	18	13	2	
72.90798	67.37210	.9980411	1.358075	18	13	1	
73.28366	67.11515	.9456347	1.435955	19	13	1	
73.42408	67.01077	.9264603	1.464821	19	13	1	
73.65320	66.92394	.8854475	1.488589	19	12	1	
73.88987	66.84595	.8485733	1.510238	19	12	1	
74.01121	66.80421	.8294755	1.520666	20	12	1	
74.12601	66.71552	.7908922	1.530125	20	12	1	
74.63754	66.31876	.6631785	1.567962	20	12	1	
74.86018	66.14531	.6234152	1.582606	20	12	1	
74.98423	66.04848	.6041983	1.590364	20	12	1	
75.00176	66.02966	.6013735	1.591439	21	12	1	
75.04697	65.96234	.5915335	1.592348	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
+Particle No. 6 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
66.00000	65.50000	.5000000	.0000000E+00	11	11	1	
66.06837	65.50000	.5091043	.1231558E-02	12	11	1	
66.12806	65.50000	.5156416	.2353367E-02	12	11	1	

66.34400	65.50000	5430463	.6840605E-02	12	11	1
66.92921	65.50000	.6756257	.2478956E-01	12	11	1
67.01383	65.50000	.7081760	.2870383E-01	13	11	1
67.08609	65.50000	.7173000	.3230425E-01	13	11	1
67.34941	65.50000	.7554753	.4670591E-01	13	11	1
67.87820	65.50000	.8696525	.8448779E-01	13	11	1
68.00542	65.50000	.9079598	.9633590E-01	14	11	1
68.11226	65.50000	.9207676	.1070877	14	11	1
68.50226	65.50000	.9744415	.1500950	14	11	1
68.78186	65.50000	1.026854	.1894954	14	11	2
68.98582	65.50000	1.072694	.2232827	14	11	2
69.17158	65.50000	1.090730	.2553587	15	11	2
69.33599	65.50000	1.105158	.2843523	15	11	2
69.96204	65.50000	1.163768	.4003265	15	11	2
71.10478	65.50000	1.178590	.6212217	17	11	2
71.86366	65.50000	1.130369	.7586830	17	11	2
72.00272	65.50000	1.120819	.7824279	18	11	2
72.14457	65.50000	1.095169	.8059023	18	11	2
72.70145	65.50000	1.006797	.8891608	18	11	2
72.74880	65.50000	1.000000	.8957124	18	11	1
73.00000	65.50000	.9717933	.9229973	18	11	1
74.00000	65.50000	.8731222	1.022294	19	11	1
75.00000	65.50000	.7478607	1.068341	20	11	1
76.00000	65.50000	.6445056	1.080905	21	11	1

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
 +Particle No. 7 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
66.00000	65.00000	.5000000	.0000000E+00	11	10	1	
66.05647	64.94314	.5105182	.3763665E-02	12	10	1	
66.10685	64.90334	.5193737	.7162138E-02	12	10	1	
66.30259	64.74905	.5572806	.2075603E-01	12	10	1	
66.76853	64.38438	.6765347	.5591179E-01	12	10	1	
66.96517	64.23164	.7437507	.7211855E-01	12	10	1	
67.03437	64.19103	.7637681	.7804342E-01	13	10	1	
67.10203	64.16931	.7745599	.8396348E-01	13	10	1	
67.35793	64.08170	.8197762	.1075968	13	10	1	
67.56156	64.00491	.8616904	.1279896	13	10	1	
67.66460	63.93087	.8787571	.1476530	13	9	1	
67.75130	63.86488	.8926359	.1654939	13	9	1	
68.00257	63.68678	.9311764	.2174351	14	9	1	
68.24319	63.60740	.9561397	.2677203	14	9	1	
68.94968	63.38786	1.032139	.4241952	14	9	2	
69.35474	63.33411	1.056616	.5196434	15	9	2	
69.72300	63.28959	1.077555	.6073397	15	9	2	
71.17965	63.28649	1.092361	.9581249	17	9	2	
71.85152	63.36462	1.069004	1.117520	17	9	2	
72.02477	63.38683	1.062382	1.158106	18	9	2	
72.21909	63.44138	1.044994	1.203327	18	9	2	
72.82949	63.61444	.9932172	1.342301	18	9	1	
73.03118	63.68382	.9769449	1.384417	19	9	1	
73.24039	63.83323	.9470515	1.427724	19	9	1	
73.45684	63.99316	.9176584	1.472228	19	9	1	
73.69959	64.08372	.8754902	1.497041	19	10	1	
73.95005	64.16460	.8378756	1.519525	19	10	1	
74.00812	64.18436	.8289174	1.524468	20	10	1	
74.07065	64.23242	.8073276	1.529676	20	10	1	
74.33602	64.43684	.7295889	1.550510	20	10	1	
74.85242	64.83656	.6236763	1.586174	20	10	1	
74.95914	64.91947	.6069812	1.592879	20	10	1	
74.99841	64.94999	.6011859	1.595296	20	10	1	
75.09777	65.08591	.5803196	1.597342	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21
 +Particle No. 8 in progress

PARTICLE NO.	X	Y	Z	TIME	J	I	K
65.50000	65.00000	.5000000	.0000000E+00	11	10	1	
65.56042	64.27811	.6300079	.1883855E-01	11	10	1	
65.60308	64.07108	.7121251	.2822724E-01	11	10	1	
65.62432	64.00364	.7508795	.3218593E-01	11	10	1	
65.63333	63.95666	.7575827	.3520977E-01	11	9	1	
65.64104	63.91435	.7619143	.3798353E-01	11	9	1	
65.67265	63.75214	.7795813	.4907856E-01	11	9	1	
65.81217	63.20308	.8560126	.9345871E-01	11	9	1	
65.97562	62.78391	.9427776	.1379368	11	9	1	
66.13581	62.59465	1.004408	.1775093	12	9	2	
66.26454	62.48688	1.061322	.2136257	12	9	2	
66.82461	62.10627	1.299040	.3580914	12	9	2	
66.99149	62.01474	1.367055	.3976578	12	9	2	
67.09586	61.96002	1.384562	.4311106	13	8	2	
67.19916	61.90077	1.394600	.4689973	13	8	2	
67.61957	61.67131	1.435373	.6204643	13	8	2	
69.39164	61.14454	1.549606	1.226332	15	8	2	
70.03436	61.06786	1.570964	1.440776	16	8	2	
70.66975	61.06588	1.575454	1.651964	16	8	2	
72.20622	61.25838	1.542867	2.164700	18	8	2	
72.97340	61.47811	1.504376	2.426565	18	8	2	
73.00000	61.48601	1.503046	2.435746	18	8	2	
74.00000	61.78383	1.453079	2.781127	19	8	2	
74.22878	61.96644	1.427816	2.866473	20	8	2	
74.27013	62.00013	1.421840	2.881471	20	9	2	
74.33054	62.03354	1.398887	2.896116	20	9	2	
74.56441	62.17505	1.309258	2.954695	20	9	2	
74.95399	62.46323	1.157041	3.059671	20	9	2	
75.00000	62.50190	1.138838	3.072669	20	9	2	
75.34978	62.80541	1.000000	3.172663	21	9	1	
75.75040	64.00000	.7327593	3.311387	21	9	1	
75.83995	65.00000	.6597240	3.372379	21	10	1	
75.75261	66.00000	.5722629	3.385505	21	11	1	

REMOVED: PARTICLE TRAPPED AT WELL K= 1, I= 11, J= 21

>>ALL PARTICLES HAVE ALREADY BEEN REMOVED

PATH3D BENCHMARK RESULTS

D-4.2

**CONSTITUENTS EXCEEDING ROCKY FLATS GROUNDWATER
BACKGROUND LEVELS**

D-4.1

**CONSTITUENTS EXCEEDING ROCKY FLATS GROUNDWATER
QUALITY STANDARDS**

D-3.2

GRAPHED DATA

D-3.1

TABULATED DATA

D-2.2

GRAPHED DATA

D-2.1

TABULATED DATA

D-1.2

GRAPHED DATA

D-1.1

TABULATED DATA

FIELD EVALUATION ANALYTICAL RESULTS

C-2.5.3

FLOW VS. TURBIDITY

C-2.5.2

FIELD PARAMETER DATA

C-2.5

WELL 20591

C-2.5.1

HEAD DEPRESSION VS. FLOW RATE

C-2.4.3

FLOW VS. TURBIDITY

C-2.4.2

FIELD PARAMETER DATA

C-2.4.1

HEAD DEPRESSION VS. FLOW RATE

C-2.4

WELL 2587

C-2.3.3

FLOW VS. TURBIDITY

C-2.3.2

FIELD PARAMETER DATA

C-2.3

WELL 1786

C-2.3.1

HEAD DEPRESSION VS. FLOW RATE

C-2.2.3

FLOW VS. TURBIDITY

C-2.2.2

FIELD PARAMETER DATA

C-2.2

WELL 41691

C-2.2.1

HEAD DEPRESSION VS. FLOW RATE

C-2.1

WELL 0487

C-2.1.1

HEAD DEPRESSION VS. FLOW RATE

C-1.5

WELL 20591

C-1.4

WELL 2587

C-1.3

WELL 1786

C-1.1

WELL 0487

C-1.2

WELL 41691

FIELD EVALUATION PUMPING DATA

GRUNDFOS SUBMERSIBLE PUMP TEMPERATURE BENCH TEST

A-2.2

BENCH TEST RESULTS

A-2.1

FIELD TEST RESULTS

A-1.2

BENCH TEST RESULTS

A-1.1

FIELD TEST RESULTS

WATER QUALITY FIELD PARAMETER DATA