EXHIBIT E

THERMAL PLUME SURVEYS ON THE CHICAGO SANITARY AND SHIP CANAL NEAR WILL COUNTY STATION JUNE-SEPTEMBER 2002

Part 2 of 4

Table 4-9 Cross-Sectional Temperature Statistics at Transects During the 10 July 2002 Will County Survey

Temperature (F)		Temperature (F) and Cross-Sectional Area (%) at Transects										
		Upstr	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
		Temperature (F)										
	Min	79.7	79.5	79.6	79.6	80.8	82.3	81.0	83.0	82.8	82.9	84.9
	Max	80.6	83.0	91.9	91.8	87.9	88.4	87.2	87.3	87.5	87.1	86.1
	Average	79.8	79.8	83.4	85.4	85.9	85.9	85.1	86.1	85.2	85.6	85.5
	DelT (F)	Cross-Sectional Area (%)										
79	-0.8	100	100	100	100	100	100	100	100	100	100	100
80	0.2	10.3	11.8	86.5	94.2	100	100	100	100	100	100	100
81	1.2	0	6.5	67.9	90.5	99.9	100	99.9	100	100	100	100
82	2.2	0	3.0	56.4	87.4	98.3	100	94.8	100	100	100	100
83	3.2	0	0	46.4	83.9	95.7	99.0	88.2	99.9	99.1	99.6	100
84	4.2	0	0	40.8	80.6	91.8	91.3	80.5	96.0	88.3	92.4	100
85	5.2	0	0	27.3	71.9	74.4	82.3	67.4	87.8	74.7	79.7	99.6
86	6.2	0	0	20.2	43.0	59.9	52.2	41.4	65.1	25.6	37.4	1.1
87	7.2	0	0	18.0	31.1	27.8	21.5	7.1	28.0	6.6	3.9	0
88	8.2	0	0	15.7	23.7	0	8.2	0	0	0	0	0
89	9.2	0	0	13.5	20.0	0	0	0	0	0	0	0
90	10.2	0	0	11.5	13.6	0	0	0	0	0	0	0
91	11.2	0	0	8.8	8.4	0	0	0	0	0	0	0
92	12.2	0	0	0	0	0	0	0	0	0	0	0
93	13.2	0	0	0	0	0	0	0	0	0	0	0
94	14.2	0	0	0	0	0	0	0	0	0	0	0

Table 4-10 Cross-Sectional Temperature Statistics at Transects During the 24 July 2002 Will County Survey

Temperature (F)		Temperature (F) and Cross-Sectional Area (%) at Transects										
		Upstr	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
		Temperature (F)										
	Min	83.3	83.5	83.5	83.9	88.4	86.1	86.3	87.9	88.8	89.2	89.5
	Max	83.4	88.7	94.9	93.9	92.1	91.6	90.8	91.8	90.5	90.8	90.3
	Average	83.4	85.8	87.6	88.7	90.7	89.7	89.3	90.0	89.8	90.0	89.9
	DelT (F)	Cross-Sectional Area (%)										
80	-3.4	100	100	100	100	100	100	100	100	100	100	100
81	-2.4	100	100	100	100	100	100	100	100	100	100	100
82	-1.4	100	100	100	100	100	100	100	100	100	100	100
83	-0.4	100	100	100	100	100	100	100	100	100	100	100
84	0.6	0	86.4	80.1	99.8	100	100	100	100	100	100	100
85	1.6	0	68.2	73.6	94.5	100	100	100	100	100	100	100
86	2.6	0	47.6	62.5	88.2	100	100	100	100	100	100	100
87	3.6	0	21.0	50.6	81.6	100	98.1	95.4	100	100	100	100
88	4.6	0	8.9	45.4	71.9	100	92.9	84.8	99.8	100	100	100
89	5.6	0	0	39.5	49.5	95.0	77.0	75.2	85.2	92.5	100	100
90	6.6	0	0	25.3	30.7	82.7	50.0	25.1	63.3	52.9	63.2	55.7
91	7.6	0	0	19.6	6.6	51.3	12.6	0	7.6	0	0	0
92	8.6	0	0	16.3	2.2	1.0	0	0	0	0	0	0
93	9.6	0	0	13.3	0.7	0	0	0	0	0	0	0
94	10.6	0	0	10.5	0	0	0	0	0	0	0	0

Table 4-11 Cross-Sectional Temperature Statistics at Transects During the 8 August 2002 Will County Survey

Temperature (F)		Temperature (F) and Cross-Sectional Area (%) at Transects										
		Upstr	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
		Temperature (F)										
	Min	80.7	80.9	80.9	80.9	81.5	82.6	84.2	85.9	87.0	86.9	86.4
	Max	81.3	83.9	92.9	91.5	89.6	89.7	89.9	89.3	88.6	88.2	87.0
	Average	80.8	81.9	85.1	86.1	87.2	87.2	87.4	87.6	87.8	87.4	86.7
	DelT (F)	Cross-Sectional Area (%)										
80	-0.8	100	100	100	100	100	100	100	100	100	100	100
81	0.2	2.1	99.3	91.1	99.3	100	100	100	100	100	100	100
82	1.2	0	37.8	78.0	89.0	97.4	100	100	100	100	100	100
83	2.2	0	2.4	73.0	84.7	94.4	98.8	100	100	100	100	100
84	3.2	0	0	58.4	81.1	91.4	95.1	100	100	100	100	100
85	4.2	0	0	49.1	74.7	88.9	91.0	98.9	100	100	100	100
86	5.2	0	0	42.5	64.8	83.8	84.6	97.7	97.9	100	100	100
87	6.2	0	0	33.2	44.7	72.8	73.6	83.0	87.0	99.9	95.7	0.3
88	7.2	0	0	19.2	21.8	52.7	40.8	24.6	29.8	38.4	3.2	0
89	8.2	0	0	16.5	12.1	19.1	8.2	7.1	3.6	0	0	0
90	9.2	0	0	13.8	6.9	0	0	0	0	0	0	0
91	10.2	0	0	11.7	2.7	0	0	0	0	0	0	0
92	11.2	0	0	9.3	0	0	0	0	0	0	0	0
93	12.2	0	0	0	0	0	0	0	0	0	0	0
94	13.2	0	0	0	0	0	0	0	0	0	0	0

Table 4-12 Cross-Sectional Temperature Statistics at Transects During the 29 August 2002 Will County Survey

Temperature (F)		Temperature (F) and Cross-Sectional Area (%) at Transects										
		Upstr	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
		Temperature (F)										
	Min	78.4	78.4	78.5	80.0	82.4	83.4	82.7	82.0	82.8	82.5	82.0
	Max	78.8	79.2	89.1	88.0	85.2	85.1	84.4	82.9	83.3	83.2	83.2
	Average	78.5	78.6	80.7	83.2	83.6	84.1	83.6	82.5	83.0	82.8	82.5
	DelT (F)	Cross-Sectional Area (%)										
78	-0.5	100	100	100	100	100	100	100	100	100	100	100
79	0.5	0	4.0	45.2	100	100	100	100	100	100	100	100
80	1.5	0	0	31.1	98.9	100	100	100	100	100	100	100
81	2.5	0	0	27.6	75.6	100	100	100	100	100	100	100
82	3.5	0	0	24.5	61.4	100	100	100	99.9	100	100	99.7
83	4.5	0	0	21.9	51.9	80.1	100	97.1	0	33.7	12.6	4.0
84	5.5	0	0	19.1	43.2	23.4	66.5	9.8	0	0	0	0
85	6.5	0	0	16.9	26.1	0.6	0.4	0	0	0	0	0
86	7.5	0	0	14.7	11.2	0	0	0	0	0	0	0
87	8.5	0	0	12.3	5.6	0	0	0	0	0	0	0
88	9.5	0	0	10.1	0	0	0	0	0	0	0	0
89	10.5	0	0	5.2	0	0	0	0	0	0	0	0
90	11.5	0	0	0	0	0	0	0	0	0	0	0
91	12.5	0	0	0	0	0	0	0	0	0	0	0
92	13.5	0	0	0	0	0	0	0	0	0	0	0
93	14.5	0	0	0	0	0	0	0	0	0	0	0
94	15.5	0	0	0	0	0	0	0	0	0	0	0

APPENDIX A

CALIBRATION RECORDS

SEA-BIRD ELECTRONICS, INC.
1808 136th Place N.E., Bellevue, Washington 98005 USA
Phone: (425) 643 - 9866 Fax: (425) 643 - 9954 Internet: seabird@seabird.com

SENSOR SERIAL NUMBER = 4194
CALIBRATION DATE: 20-Jun-02

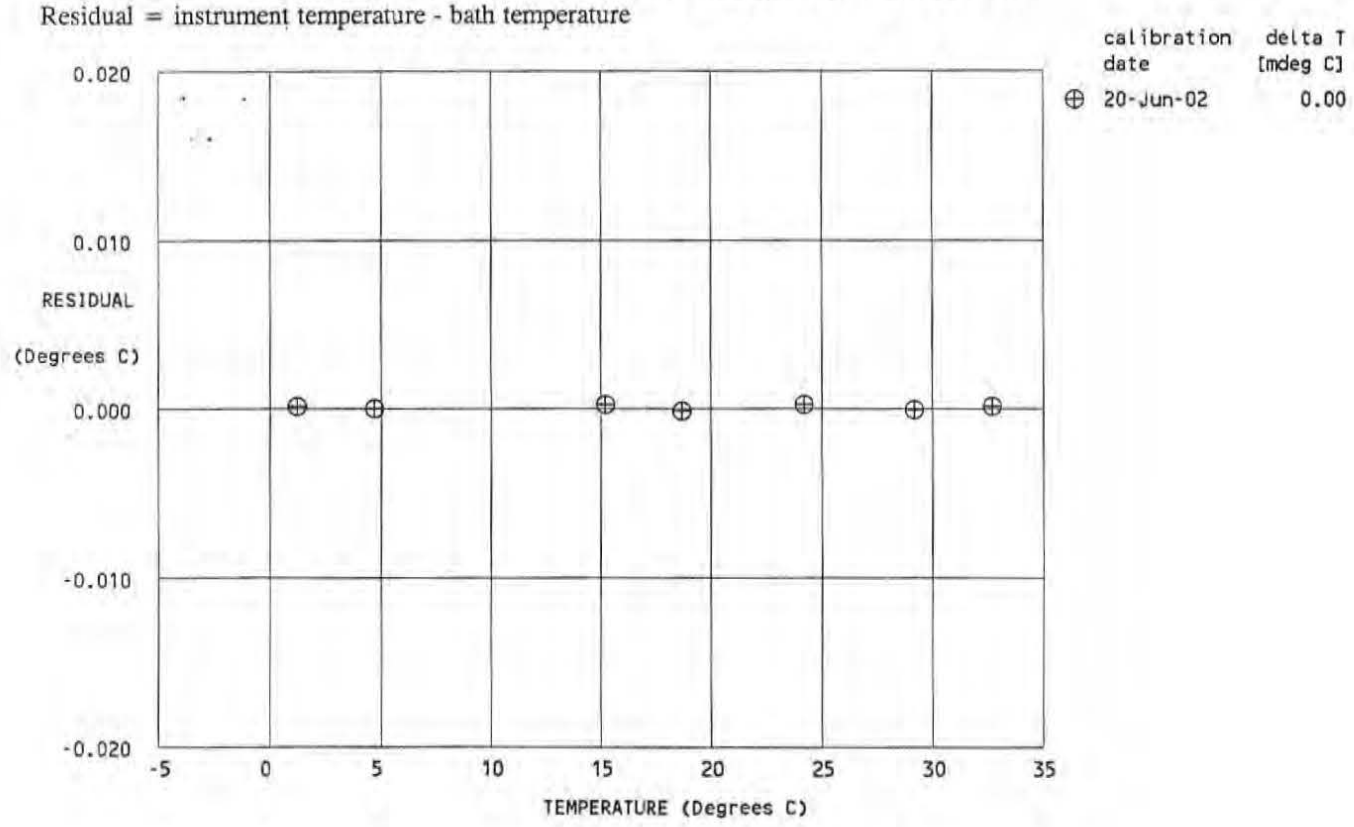
SBE 19plus
TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = 1.159623e-03
a1 = 2.842569e-04
a2 = -2.444222e-06
a3 = 2.319154e-07

BATH TEMP (ITS-90 °C)	INSTRUMENT OUTPUT: n	INST TEMP (ITS-90 °C)	RESIDUAL (ITS-90 °C)
0.9999	679883.3	0.9999	0.0000
4.5000	606426.5	4.4999	-0.0001
15.0001	421743.3	15.0003	0.0002
18.5000	371601.5	18.4998	-0.0002
23.9999	303147.1	24.0000	0.0001
29.0000	250767.0	28.9999	-0.0001
32.5000	219012.6	32.5001	0.0001

MV = (n - 524288) / 1.6e7
R = (MV * 2.9e9 + 1.024e8) / (2.048e4 - MV * 2e5)
Temperature ITS-90 = 1 / { a0 + a1[ℓn(R)] + a2[ℓn^2(R)] + a3[ℓn^3(R)] } - 273.15 (°C)
Residual = instrument temperature - bath temperature



SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington 98005 USA
Phone: (425) 643 - 9866 Fax: (425) 643 - 9954 Internet: seabird@seabird.com

SENSOR SERIAL NUMBER = 4194
CALIBRATION DATE: 08-Apr-02

PRESSURE CALIBRATION DATA
44 psia S/N 470

SBE 19plus PRESSURE COEFFICIENTS

PA0 = 9.713166e-03	PTCA0 = 5.252761e+05
PA1 = 1.334247e-04	PTCA1 = 7.174279e+00
PA2 = -7.406892e-13	PTCA2 = -1.731691e-01
PTEMPA0 = -5.882669e+01	PTCB0 = 2.498750e+01
PTEMPA1 = 5.487260e+01	PTCB1 = 5.000000e-04
PTEMPA2 = -5.681028e-01	PTCB2 = 0.000000e+00

PRESSURE SPAN CALIBRATION:

PRESSURE PSIA	PRESSURE OUTPUT	TEMPERATURE OUTPUT	COMPUTED PRESSURE	ERROR % FSR
14.70	635395.0	1.466	14.68	-0.05
24.76	711081.0	1.465	24.76	-0.00
29.76	748635.0	1.466	29.75	-0.02
34.75	786218.0	1.466	34.75	-0.00
39.76	823837.0	1.466	39.75	-0.00
44.75	861439.0	1.466	44.75	-0.00
39.75	823857.0	1.467	39.76	0.01
34.75	786271.0	1.467	34.76	0.01
29.75	748681.0	1.468	29.76	0.02
24.77	711123.0	1.468	24.76	-0.01
14.66	635437.0	1.469	14.68	0.06

THERMAL OFFSET AND TEMPERATURE CAL:

TEMPERATURE (ITS-90 °C)	TEMPERATURE OUTPUT	PRESSURE OUTPUT
32.50	1.694	637937.19
29.00	1.628	637911.88
24.00	1.534	637931.06
18.50	1.430	637957.00
15.00	1.365	637949.48
4.50	1.168	637883.53
1.00	1.103	637884.76

SPAN THERMAL SENSITIVITY:

TEMPERATURE (ITS-90 °C)	SPAN MV
-5.00	24.99
35.00	25.01

y = thermistor output; $t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

x = pressure output - $PTCA0 - PTCA1 * t - PTCA2 * t^2$

$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$

pressure (psia) = $PA0 + PA1 * n + PA2 * n^2$

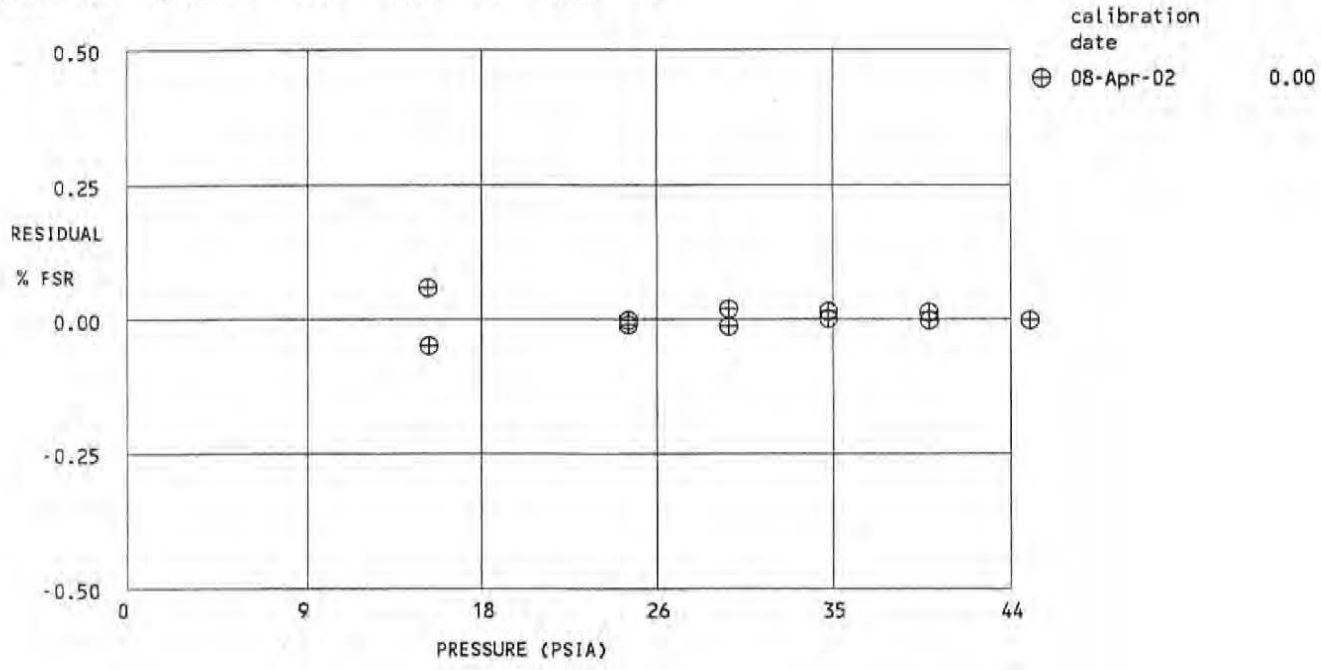


Table A-3 Post-Calibration of Temperature for SBE 19plus SEARLAT 2016-019

SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington 98005 USA
Phone: (425) 643 - 9866 Fax: (425) 643 - 9954 Internet: seabird@seabird.com

SENSOR SERIAL NUMBER = 4194
CALIBRATION DATE: 05-Oct-02

SBE 19plus
TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = 1.188278e-03
a1 = 2.736347e-04
a2 = -1.134308e-06
a3 = 1.782420e-07

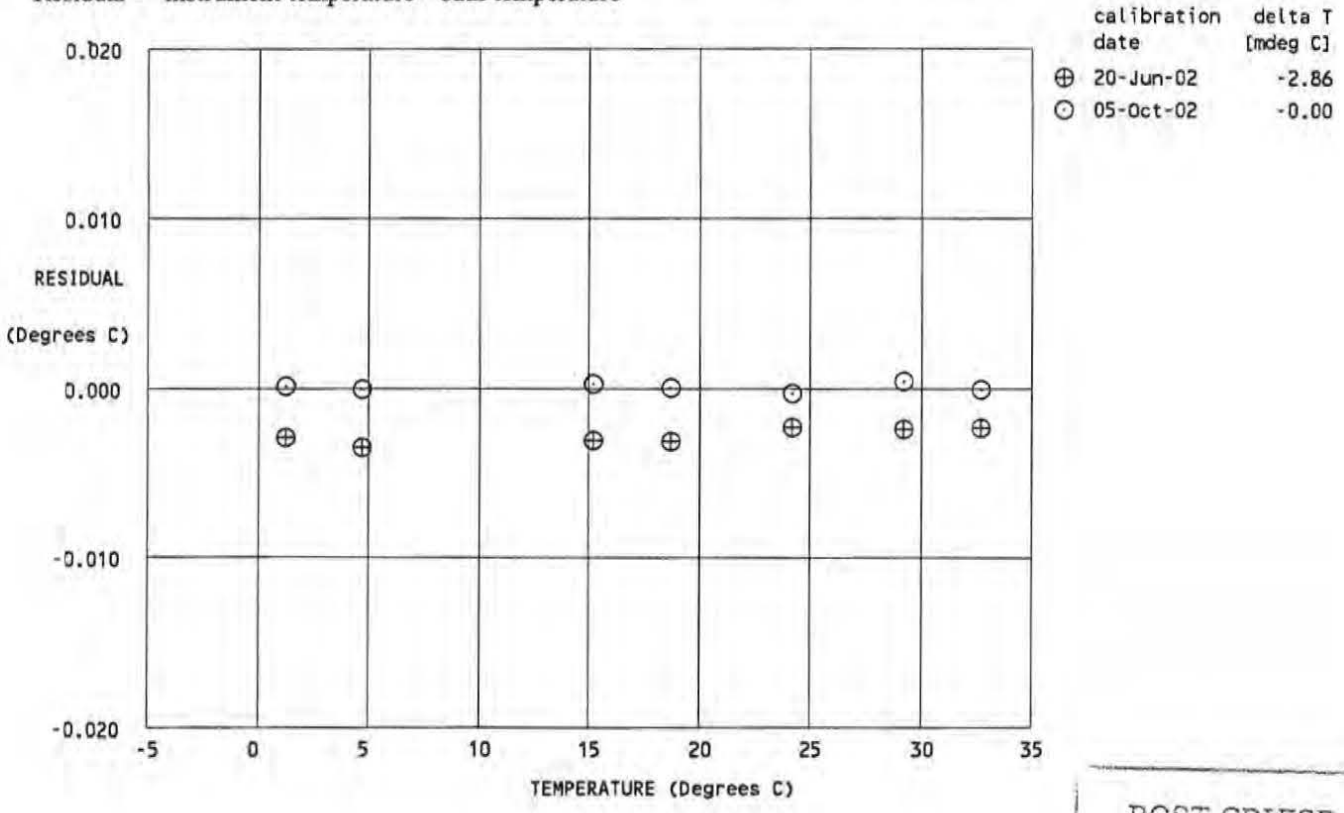
BATH TEMP (ITS-90 °C)	INSTRUMENT OUTPUT: n	INST TEMP (ITS-90 °C)	RESIDUAL (ITS-90 °C)
1.0000	679815.2	1.0001	0.0001
4.5000	606357.0	4.4999	-0.0001
15.0000	421694.5	15.0002	0.0002
18.4999	371560.0	18.4999	-0.0000
24.0000	303123.2	23.9997	-0.0003
29.0000	250739.8	29.0004	0.0004
32.5000	218993.4	32.4999	-0.0001

MV = (n - 524288) / 1.6e7

R = (MV * 2.9e9 + 1.024e8) / (2.048e4 - MV * 2e5)

Temperature ITS-90 = $1 / \{ a0 + a1[\ell n(R)] + a2[\ell n^2(R)] + a3[\ell n^3(R)] \} - 273.15$ (°C)

Residual = instrument temperature - bath temperature



POST CRUISE CALIBRATION

SEA-BIRD ELECTRONICS, INC.
1808 - 136th Place Northeast, Bellevue, Washington 98005 USA
Phone: (425) 643-9866 Fax: (425) 643-9954 www.seabird.com

Temperature Calibration Report

Customer:	EA Engineering, Science & Technology, Inc.		
Job Number:	30480R	*Date of Report:*	07-Oct-02
Model Number:	SBE 19Plus	*Serial Number:*	19P29566-4194

Temperature sensors are normally calibrated 'as received', without adjustments, allowing a determination sensor drift. If the calibration identifies a problem, then a second calibration is performed after work is completed. The 'as received' calibration is not performed if the sensor is damaged or non-functional, or by customer request.

An 'as received' calibration certificate is provided, listing coefficients to convert sensor frequency to temperature. Users must choose whether the 'as received' calibration or the previous calibration better represents the sensor condition during deployment. In SEASOFT enter the chosen coefficients using the program SEACON. The coefficient 'offset' allows a small correction for drift between calibrations (consult the SEASOFT manual). Calibration coefficients obtained after a repair apply only to subsequent data.

'AS RECEIVED' CALIBRATION ☑ *Performed* ☐ *Not Performed*

Date: 05-Oct-02 *Drift since last cal:* +.00977 *Degrees Celsius/year*

Comments:

'CALIBRATION AFTER REPAIR' ☐ *performed* ☑ *Not Performed*

Date: *Drift since last cal:* *Degrees Celsius/year*

Comments:

SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington 98005 USA
Phone: (425) 643 - 9866 Fax: (425) 643 - 9954 Internet: seabird@seabird.com

SENSOR SERIAL NUMBER = 4194
CALIBRATION DATE: 08-Oct-02

PRESSURE CALIBRATION DATA
44 psia S/N 470

SBE 19plus PRESSURE COEFFICIENTS

PA0 =	-4.609632e-02	PTCA0 =	5.248646e+05
PA1 =	1.328293e-04	PTCA1 =	-2.187843e+01
PA2 =	4.602444e-13	PTCA2 =	2.485356e-01
PTEMPA0 =	-5.906922e+01	PTCB0 =	2.498750e+01
PTEMPA1 =	5.508782e+01	PTCB1 =	5.000000e-04
PTEMPA2 =	-6.097727e-01	PTCB2 =	0.000000e+00

PRESSURE SPAN CALIBRATION:

PRESSURE PSIA	PRESSURE OUTPUT	TEMPERATURE OUTPUT	COMPUTED PRESSURE	ERROR % FSR
14.74	635689.0	1.472	14.72	-0.04
24.83	711780.0	1.472	24.83	0.00
29.82	749299.0	1.472	29.82	0.01
34.82	786876.0	1.472	34.82	-0.00
39.82	824468.0	1.472	39.82	-0.00
44.82	862060.0	1.472	44.82	0.00
39.83	824491.0	1.473	39.82	-0.00
34.83	786921.0	1.473	34.83	-0.00
29.83	749361.0	1.473	29.83	-0.00
24.85	711883.0	1.474	24.85	-0.00
14.71	635777.0	1.474	14.73	0.04

THERMAL OFFSET AND TEMPERATURE CAL:

TEMPERATURE (ITS-90 °C)	TEMPERATURE OUTPUT	PRESSURE OUTPUT
32.50	1.694	637719.86
29.00	1.628	637694.40
24.00	1.534	637719.75
18.50	1.431	637815.30
15.00	1.365	637928.70
4.50	1.169	638009.92
1.00	1.104	638134.30

SPAN THERMAL SENSITIVITY:

TEMPERATURE (ITS-90 °C)	SPAN MV
-5.00	24.99
35.00	25.01

y = thermistor output; $t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

x = pressure output $- PTCA0 - PTCA1 * t - PTCA2 * t^2$

$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$

pressure (psia) $= PA0 + PA1 * n + PA2 * n^2$

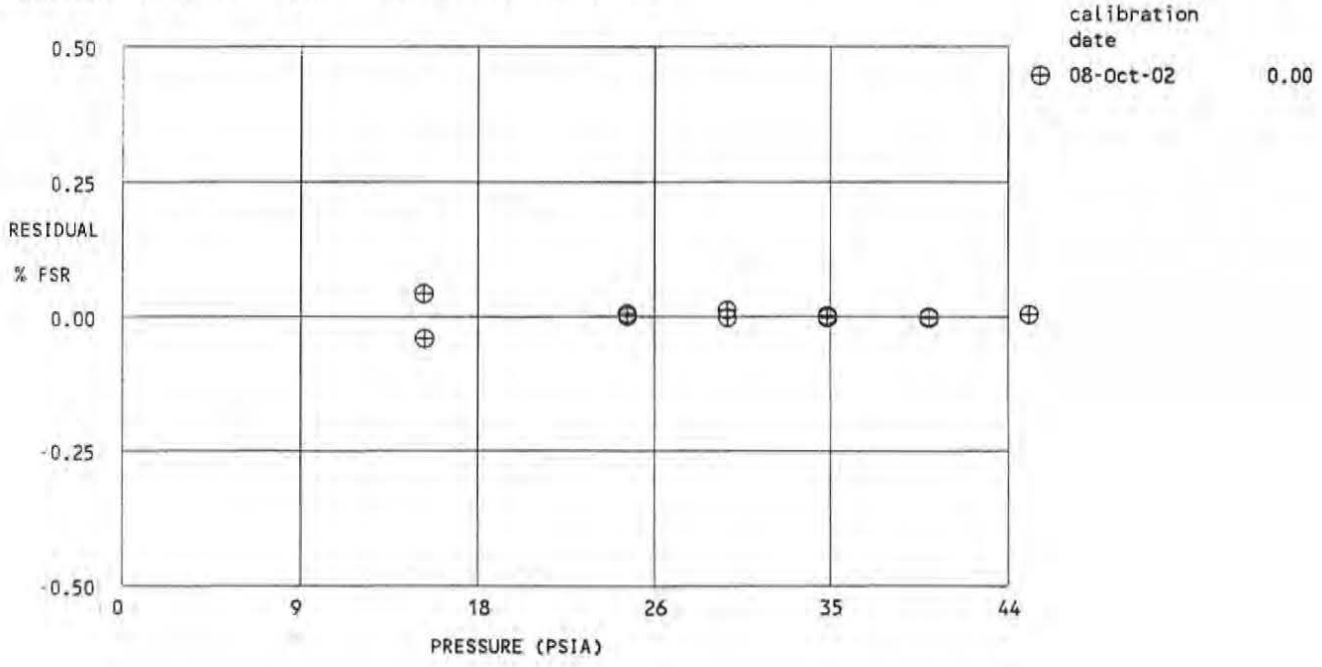


Table A-6 Pre- and Post-Calibration of YSI Probe P4 and Deban Module 285

Pre-Calibration, 10 June

Calib Temp (C)	YSI Temp (C)
14.65	14.82
14.70	14.88
14.75	14.92
20.38	20.43
20.38	20.41
20.36	20.41
20.38	20.44
25.20	25.27
25.16	25.22
25.16	25.19
25.12	25.15
25.08	25.12

Post-Calibration, 6 August

Calib Temp (C)	YSI Temp (C)
36.86	36.97
36.72	36.86
36.60	36.72
36.38	36.47
32.38	32.49
32.26	32.34
32.05	32.19
31.80	31.89
29.12	29.23
29.09	29.18
29.02	29.15
28.90	28.97
20.69	20.73
20.69	20.76
20.69	20.75
20.69	20.76

Table A-7 Pre-Calibration of YSI Probe E2-5 and Deban Module 352

*** PCB 2016-019 ***

PROBE SERIAL # E2-5 USED WITH INSTURMENT 500 # 352

RESISTANCE= 36.05195 TIMES TEMPERATURE PLUS 4962.915

TEMP DEG.C	LINEARITY DEVIATION	RESISTANCE ERROR	NOMINAL RESISTANCE	CAL RESISTANCE
15.00	-0.009	0.318	4422.136	14976.22
17.50	0.012	-0.426	4332.006	13990.44
20.00	0.020	-0.739	4241.876	13092.06
22.50	0.019	-0.688	4151.746	12269.94
25.00	0.011	-0.379	4061.616	11514.79
27.50	-0.002	0.057	3971.486	10818.72
30.00	-0.013	0.478	3881.357	10175.08
32.50	-0.021	0.739	3791.227	9578.146
35.00	-0.019	0.702	3701.097	9023.021
37.50	-0.007	0.242	3610.967	8505.455
40.00	0.020	-0.739	3520.837	8021.766

R1= 6275 R2= 12700

E OUT/DEG	E OUT AT 0 DEG	RT/DEG	RT AT 0 DEG
5.745332E-03	.7909028	-36.05195	4962.915

R CAL AT 0 DEG	R CAL AT F.S.	R CAL AT LO
23734.97	8021.766	14976.22

DATA USED:

46381 15 29932 25 16172 40 9426 6006 3202

Table A-8 Pre-Calibration of YSI Probe E2-2 and Deban Module 352

*** PCB 2016-019 *** BACKUP

PROBE SERIAL # E2-2 USED WITH INSTURMENT 500 # 352

RESISTANCE= 36.0187 TIMES TEMPERATURE PLUS 4961.188

TEMP DEG.C	LINEARITY DEVIATION	RESISTANCE ERROR	NOMINAL RESISTANCE	CAL RESISTANCE
15.00	0.022	-0.807	4420.908	14962.15
17.50	0.030	-1.095	4330.861	13978.5
20.00	0.029	-1.027	4240.814	13081.94
22.50	0.019	-0.677	4150.768	12261.4
25.00	0.004	-0.151	4060.721	11507.59
27.50	-0.012	0.417	3970.674	10812.7
30.00	-0.024	0.881	3880.627	10170.07
32.50	-0.030	1.095	3790.58	9574.024
35.00	-0.025	0.917	3700.534	9019.675
37.50	-0.006	0.220	3610.487	8502.793
40.00	0.030	-1.095	3520.44	8019.707

R1= 6275 R2= 12700

E OUT/DEG	E OUT AT 0 DEG	RT/DEG	RT AT 0 DEG
5.740035E-03	.7906276	-36.0187	4961.188

R CAL AT 0 DEG	R CAL AT F.S.	R CAL AT LO
23695.52	8019.707	14962.15

DATA USED:

46250 15 29906 25 16152 40 9397 6002 3206

Table A-9 Temperature Calibration Data for YSI Probe E2-2 and Deban Module 352, 4 October 2002

Time		Calib	YSI		Time		Calib	YSI
hhmm	ss	Temp (C)	Temp (C)		hhmm	ss	Temp (C)	Temp (C)
1723	10	25.72	24.92		1744	10	35.40	34.79
	20	25.72	24.93			20	35.40	34.79
	30	25.70	24.91			30	35.40	34.79
	40	25.70	24.92			40	35.40	34.79
	50	25.70	24.92			50	35.40	34.79
1724	0	25.70	24.92		1745	0	35.40	34.79
	10	25.70	24.91			10	35.40	34.79
	20	25.70	24.90			20	35.40	34.77
	30	25.70	24.91			30	35.40	34.78
	40	25.70	24.90			40	35.40	34.77
	50	25.70	24.90			50	35.40	34.77
1725	0	25.70	24.90		1746	0	35.38	34.77
	10	25.70	24.90			10	35.38	34.75
	20	25.70	24.90			20	35.35	34.75
	30	25.70	24.90			30	35.35	34.74
	40	25.70	24.89			40	35.32	34.73
	50	25.70	24.89			50	35.32	34.73
1726	0	25.70	24.89		1747	0	35.32	34.73
1733	10	30.60	29.79		1756	10	39.30	38.93
	20	30.60	29.80			20	39.30	38.92
	30	30.60	29.81			30	39.30	38.91
	40	30.60	29.82			40	39.28	38.90
	50	30.60	29.82			50	39.25	38.89
1734	0	30.60	29.83		1757	0	39.25	38.88
	10	30.60	29.83			10	39.22	38.86
	20	30.60	29.84			20	39.22	38.85
	30	30.60	29.85			30	39.20	38.84
	40	30.60	29.84			40	39.20	38.83
	50	30.62	29.85			50	39.18	38.82
1735	0	30.62	29.85		1758	0	39.18	38.81
	10	30.62	29.85			10	39.15	38.78
	20	30.62	29.84			20	39.15	38.77
	30	30.62	29.85			30	39.12	38.76
	40	30.62	29.84			40	39.10	38.74
	50	30.62	29.85			50	39.10	38.73
1736	0	30.62	29.84		1759	0	39.10	38.72

APPENDIX B

SURFACE TEMPERATURE DATA FOR EACH TRANSECT AND SAMPLING DATE

Figure B-1a
Surface Temperature along Horizontal Transects at Will County Station, 27 June 2002

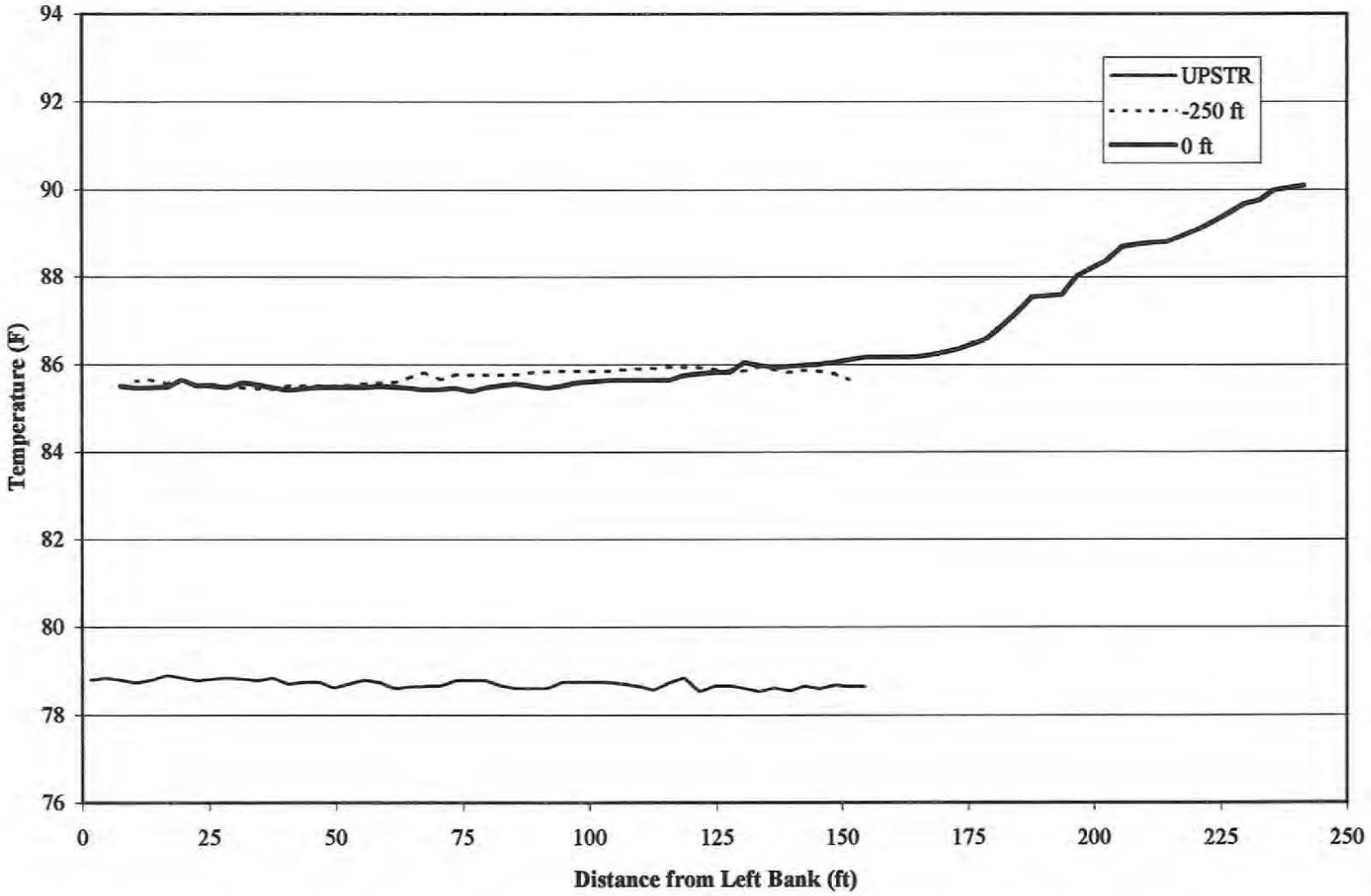


Figure B-1b
Surface Temperature along Horizontal Transects at Will County Station, 27 June 2002

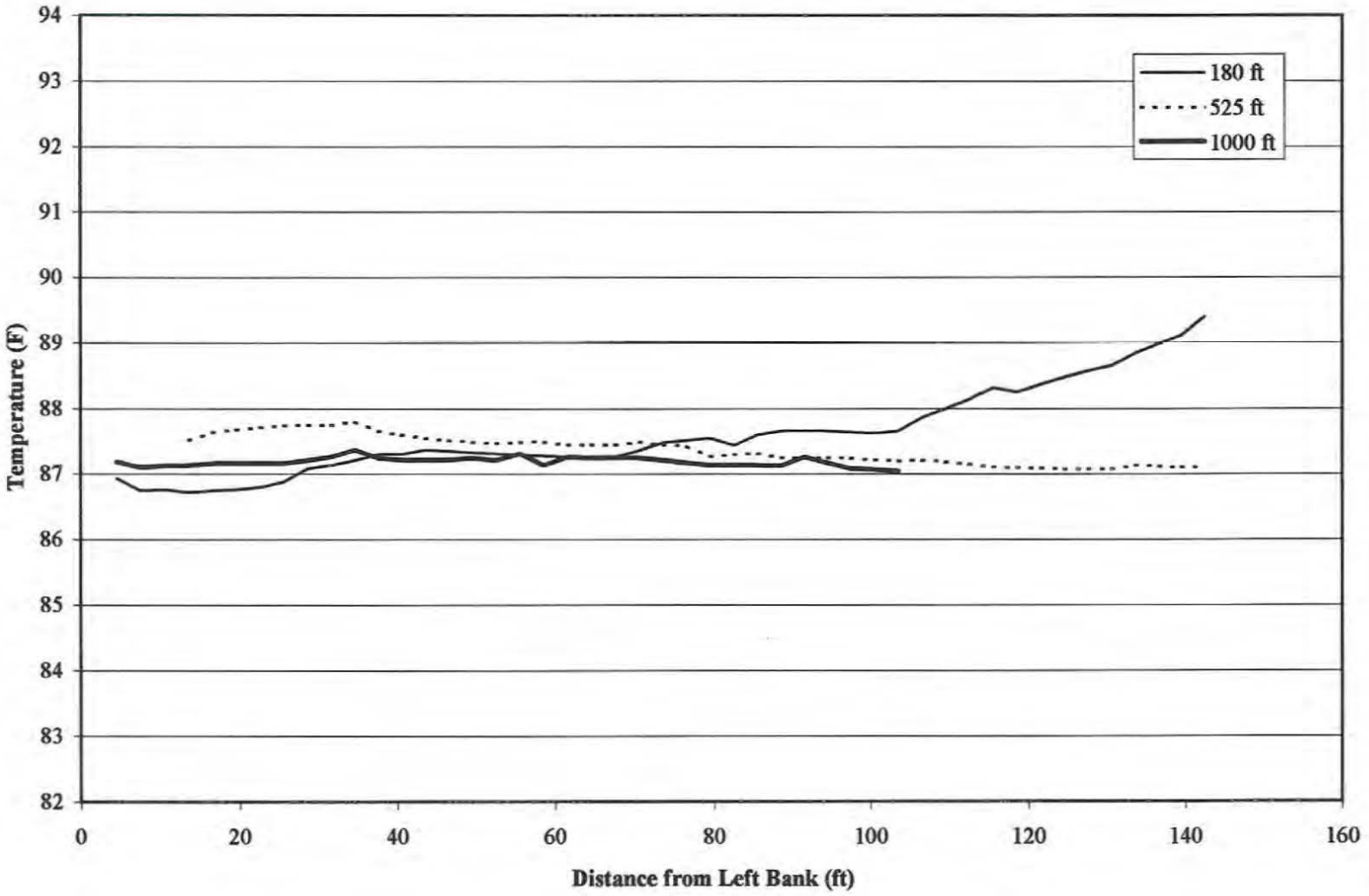


Figure B-1c
Surface Temperature along Horizontal Transects at Will County Station, 27 June 2002

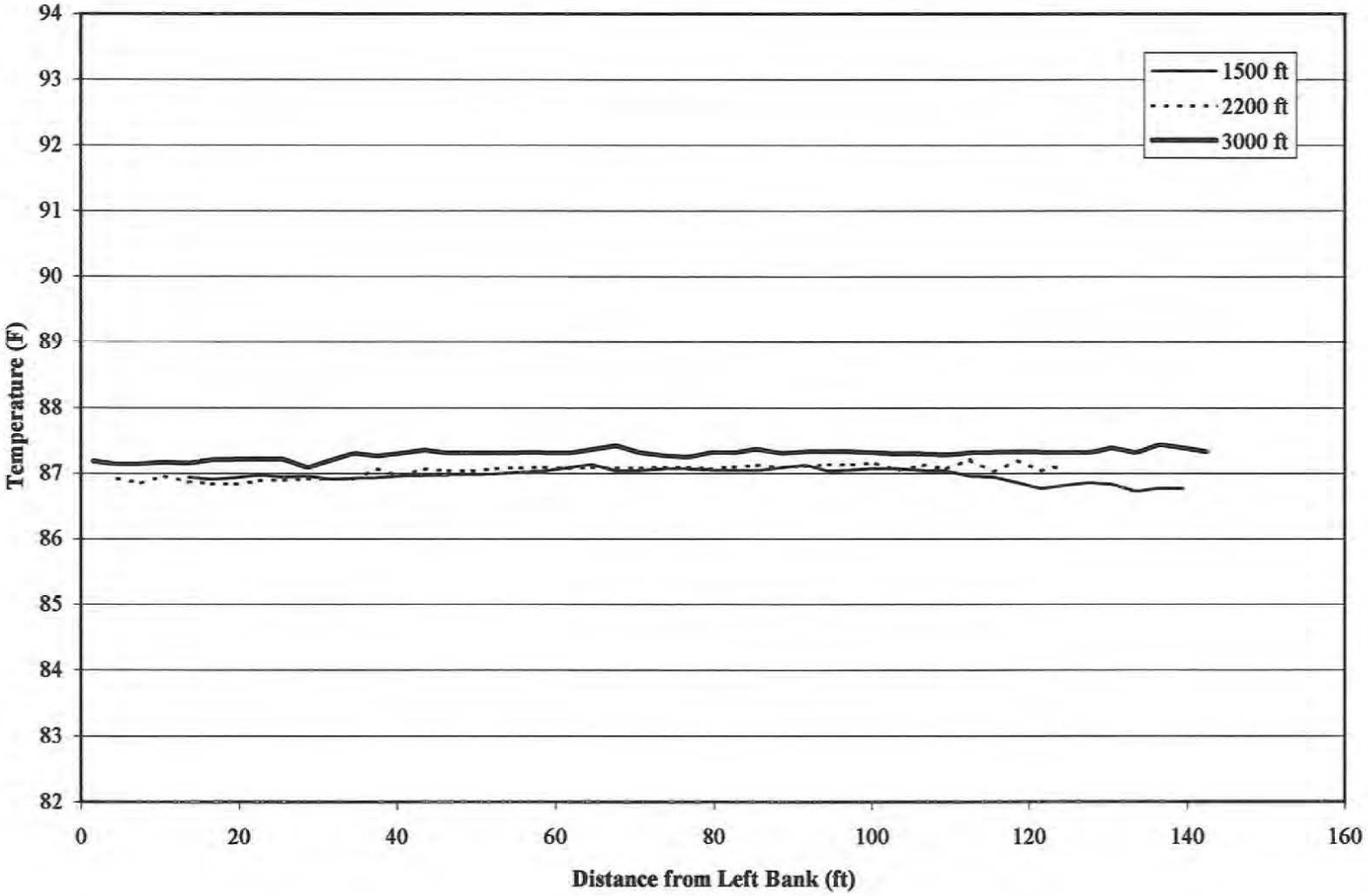


Figure B-1d
Surface Temperature along Horizontal Transects at Will County Station, 27 June 2002

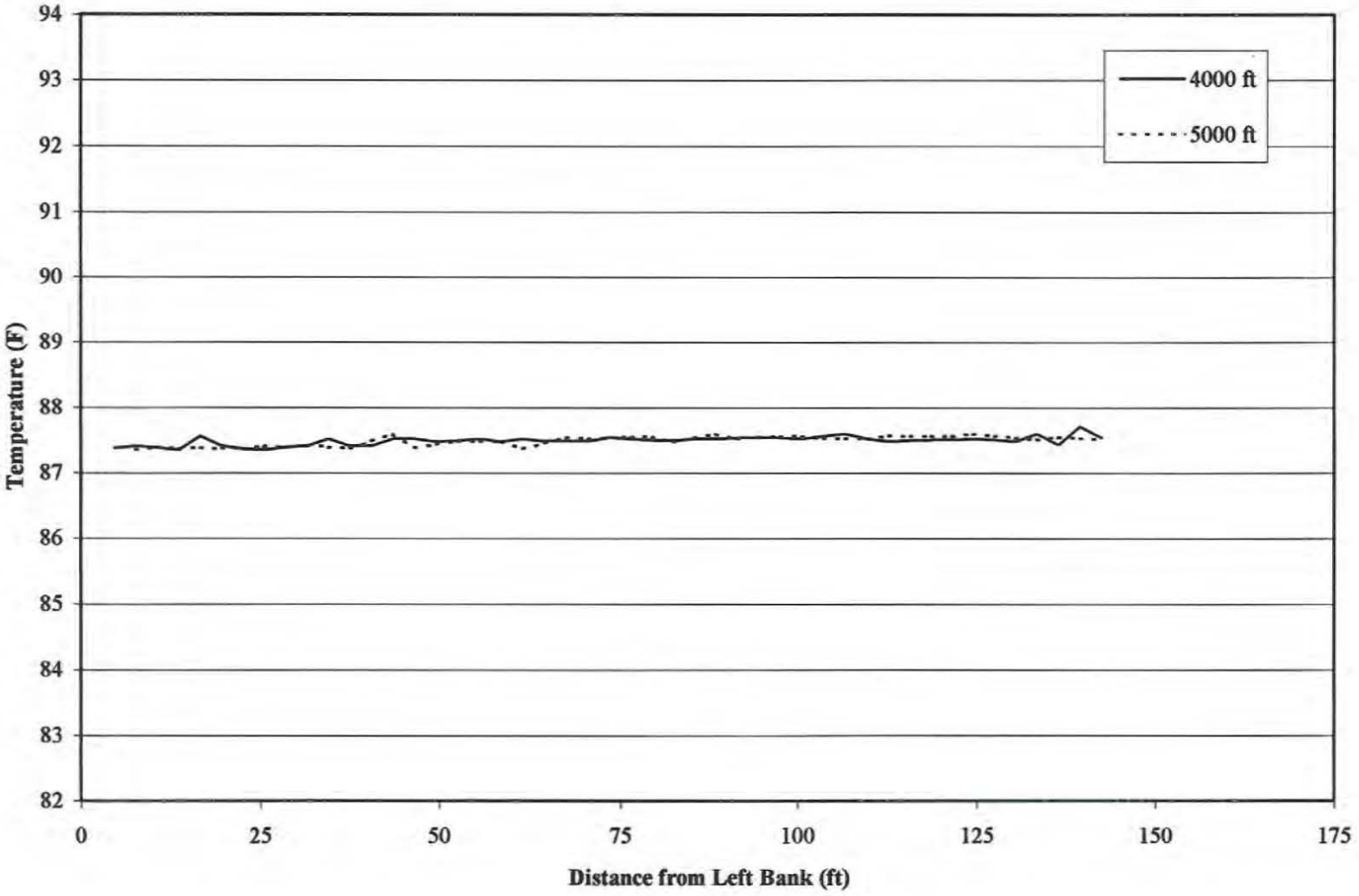


Table B-1 Surface Temperature Data near Will County Station, 27 June 2002

Distance (ft) from Left Bank	Transect										
	UPSTR	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
1.5	78.8								87.2		
4.5	78.9			86.9		87.2		86.9	87.1	87.4	
7.5	78.8		85.5	86.7		87.1		86.8	87.1	87.4	87.4
10.5	78.7	85.6	85.5	86.8		87.1		87.0	87.2	87.4	87.4
13.5	78.8	85.7	85.5	86.7	87.5	87.1	86.9	86.9	87.2	87.4	87.4
16.5	78.9	85.6	85.5	86.7	87.6	87.2	86.9	86.8	87.2	87.6	87.4
19.5	78.9	85.7	85.7	86.8	87.7	87.2	86.9	86.8	87.2	87.4	87.4
22.5	78.8	85.5	85.5	86.8	87.7	87.2	87.0	86.9	87.2	87.4	87.4
25.5	78.8	85.6	85.5	86.9	87.7	87.2	86.9	86.9	87.2	87.4	87.4
28.5	78.9	85.5	85.5	87.1	87.7	87.2	87.0	86.9	87.1	87.4	87.4
31.5	78.8	85.5	85.6	87.1	87.7	87.3	86.9	86.9	87.2	87.4	87.4
34.5	78.8	85.5	85.5	87.2	87.8	87.4	86.9	86.9	87.3	87.5	87.4
37.5	78.8	85.4	85.5	87.3	87.7	87.2	86.9	87.1	87.3	87.4	87.4
40.5	78.7	85.5	85.4	87.3	87.6	87.2	87.0	87.0	87.3	87.4	87.5
43.5	78.7	85.5	85.5	87.4	87.6	87.2	87.0	87.1	87.4	87.5	87.6
46.5	78.8	85.5	85.5	87.4	87.5	87.2	87.0	87.0	87.3	87.5	87.4
49.5	78.6	85.5	85.5	87.3	87.5	87.2	87.0	87.0	87.3	87.5	87.4
52.5	78.7	85.5	85.5	87.3	87.5	87.2	87.0	87.1	87.3	87.5	87.5
55.5	78.8	85.6	85.5	87.3	87.5	87.3	87.0	87.1	87.3	87.5	87.5
58.5	78.8	85.6	85.5	87.3	87.5	87.1	87.0	87.1	87.3	87.5	87.5
61.5	78.6	85.6	85.5	87.3	87.4	87.3	87.1	87.1	87.3	87.5	87.4
64.5	78.6	85.7	85.5	87.3	87.4	87.2	87.1	87.1	87.4	87.5	87.5
67.5	78.7	85.8	85.4	87.3	87.4	87.2	87.0	87.1	87.4	87.5	87.6
70.5	78.7	85.7	85.4	87.4	87.5	87.2	87.0	87.1	87.3	87.5	87.5
73.5	78.8	85.8	85.5	87.5	87.4	87.2	87.1	87.1	87.3	87.6	87.5
76.5	78.8	85.8	85.4	87.5	87.4	87.2	87.1	87.1	87.2	87.5	87.6
79.5	78.8	85.8	85.5	87.6	87.3	87.1	87.1	87.1	87.3	87.5	87.6
82.5	78.7	85.8	85.5	87.4	87.3	87.1	87.0	87.1	87.3	87.5	87.5
85.5	78.6	85.8	85.6	87.6	87.3	87.1	87.0	87.1	87.4	87.5	87.5
88.5	78.6	85.8	85.5	87.7	87.2	87.1	87.1	87.1	87.3	87.5	87.6
91.5	78.6	85.8	85.5	87.7	87.2	87.3	87.1	87.1	87.3	87.5	87.5
94.5	78.8	85.8	85.5	87.7	87.2	87.2	87.0	87.1	87.3	87.6	87.6
97.5	78.8	85.8	85.6	87.6	87.2	87.1	87.1	87.1	87.3	87.5	87.6
100.5	78.8	85.8	85.6	87.6	87.2	87.1	87.1	87.2	87.3	87.5	87.6
103.5	78.8	85.8	85.6	87.7	87.2	87.0	87.1	87.0	87.3	87.6	87.5
106.5	78.7	85.9	85.6	87.9	87.2		87.0	87.1	87.3	87.6	87.5
109.5	78.7	85.9	85.6	88.0	87.2		87.0	87.1	87.3	87.5	87.5
112.5	78.6	85.9	85.6	88.1	87.2		87.0	87.2	87.3	87.5	87.6
115.5	78.7	85.9	85.6	88.3	87.1		86.9	87.0	87.3	87.5	87.6
118.5	78.8	85.9	85.8	88.3	87.1		86.9	87.2	87.3	87.5	87.6
121.5	78.5	85.9	85.8	88.4	87.1		86.8	87.0	87.3	87.5	87.6
124.5	78.7	85.9	85.8	88.5	87.1		86.8	87.1	87.3	87.5	87.6
127.5	78.7	85.9	85.8	88.6	87.1		86.9		87.3	87.5	87.6
130.5	78.6	85.8	86.1	88.7	87.1		86.8		87.4	87.5	87.5
133.5	78.5	86.0	86.0	88.8	87.1		86.7		87.3	87.6	87.5
136.5	78.6	85.9	85.9	89.0	87.1		86.8		87.4	87.4	87.6
139.5	78.5	85.8	86.0	89.1	87.1		86.8		87.4	87.7	87.5

Table B-1 Surface Temperature Data near Will County Station, 27 June 2002

Distance (ft) from Left Bank	Transect										
	UPSTR	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
142.5	78.7	85.9	86.0	89.4	87.1				87.3	87.5	87.5
145.5	78.6	85.8	86.0	89.6	87.0				87.2	87.4	87.5
148.5	78.7	85.8	86.1	89.7	86.9				87.4	87.4	87.4
151.5	78.6	85.7	86.1	89.9					87.3	87.5	87.5
154.5	78.6		86.2	90.0					87.3	87.3	87.5
157.5			86.2	90.1							87.4
160.5			86.2	90.1							
163.5			86.2	90.2							
166.5			86.2								
169.5			86.3								
172.5			86.3								
175.5			86.5								
178.5			86.6								
181.5			86.9								
184.5			87.2								
187.5			87.6								
190.5			87.6								
193.5			87.6								
196.5			88.0								
199.5			88.2								
202.5			88.4								
205.5			88.7								
208.5			88.8								
211.5			88.8								
214.5			88.8								
217.5			89.0								
220.5			89.1								
223.5			89.3								
226.5			89.5								
229.5			89.7								
232.5			89.8								
235.5			90.0								
238.5			90.1								
241.5			90.1								

Figure B-2a
Surface Temperature along Horizontal Transects at Will County Station, 10 July 2002

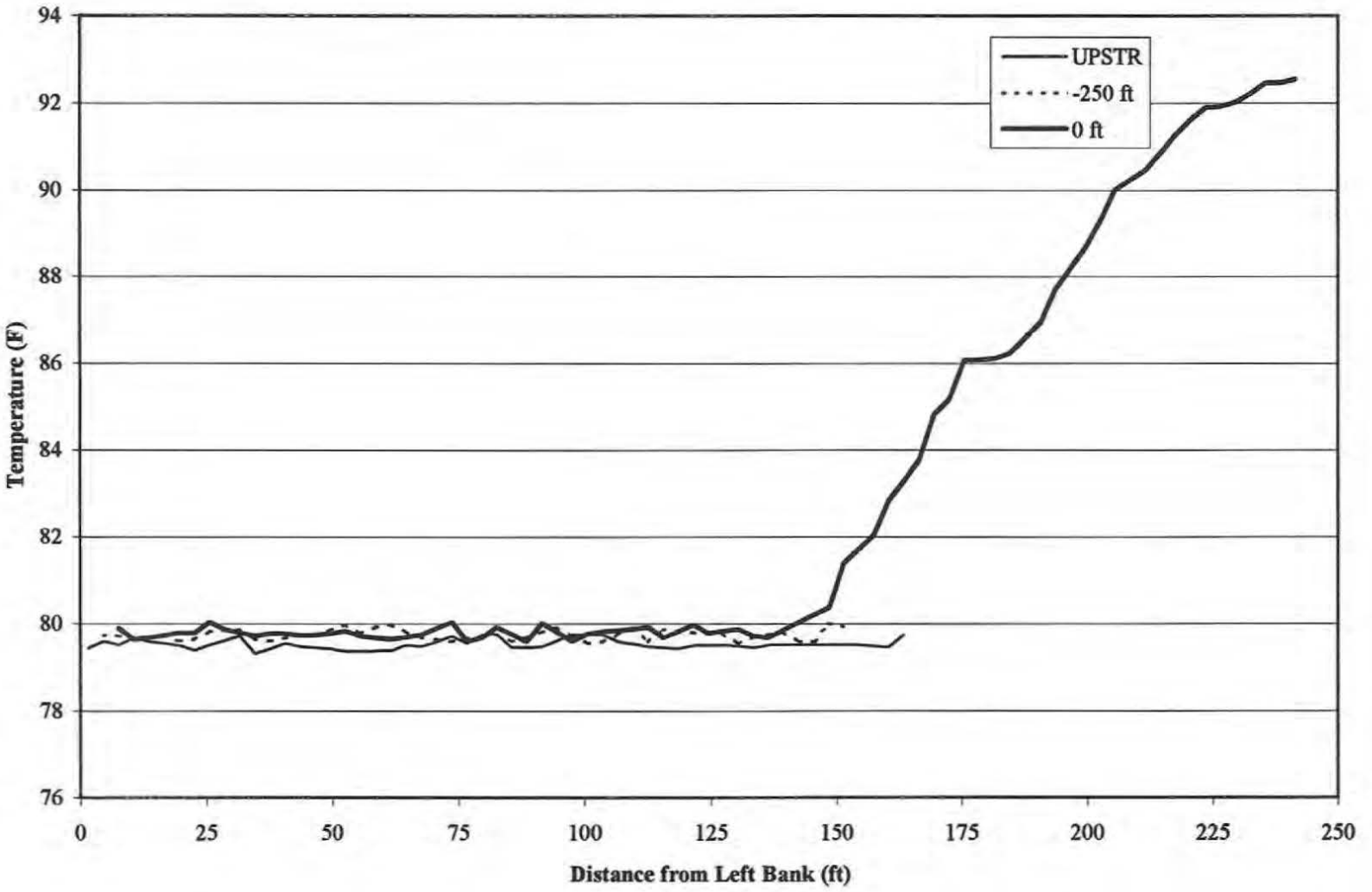


Figure B-2b
Surface Temperature along Horizontal Transects at Will County Station, 10 July 2002

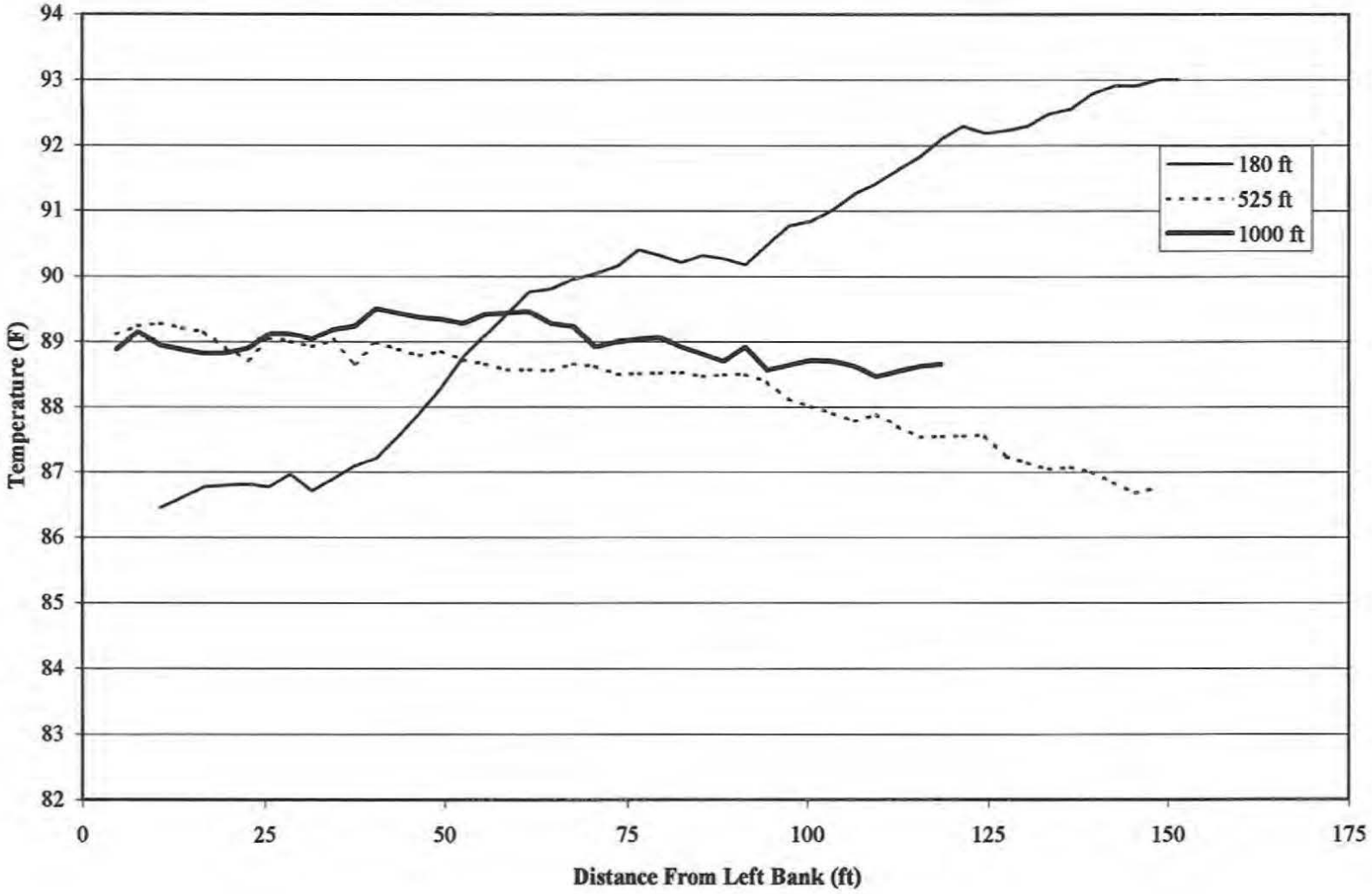


Figure B-2c
Surface Temperature along Horizontal Transects at Will County Station, 10 July 2002

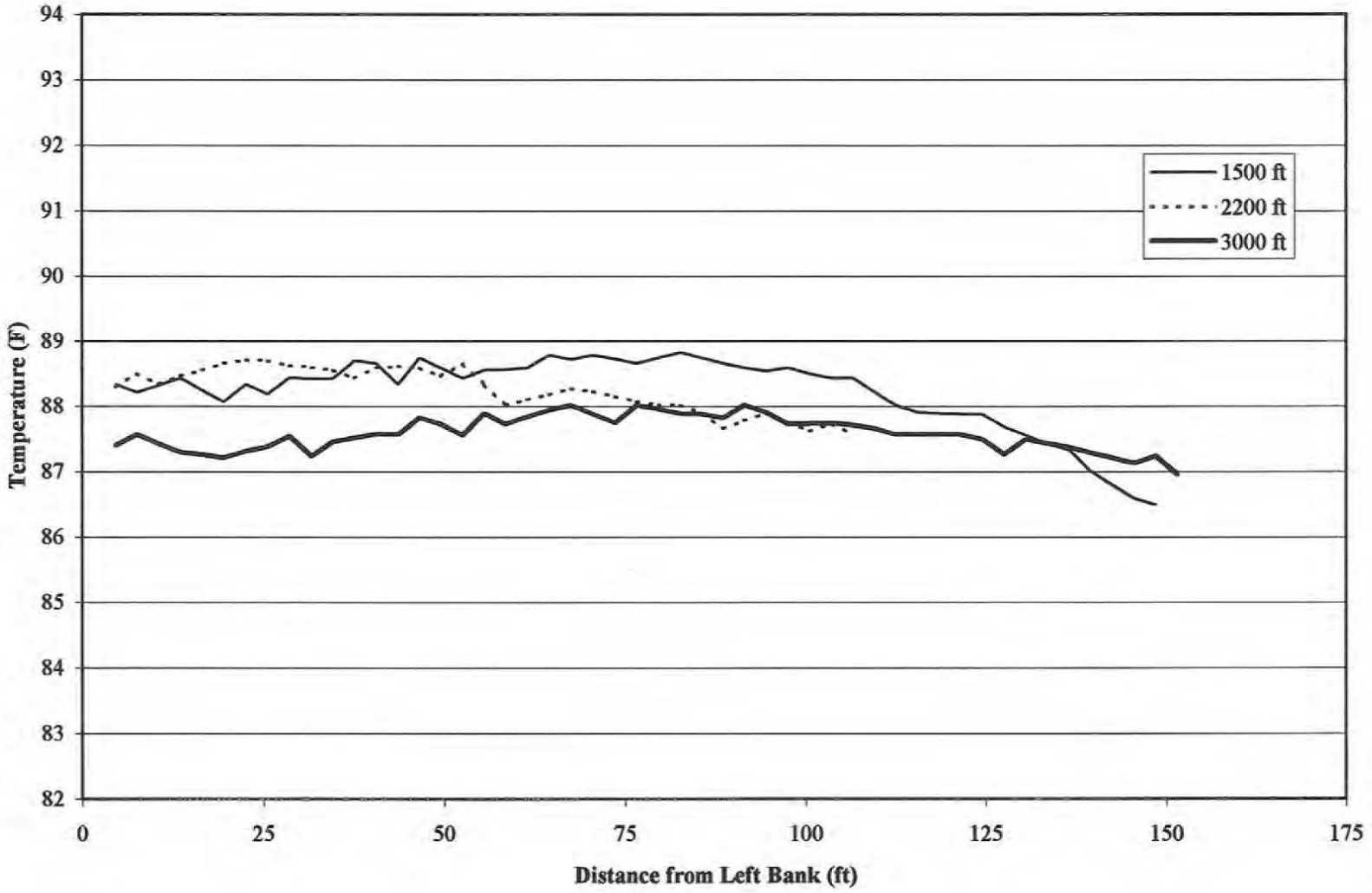


Figure B-2d
Surface Temperature along Horizontal Transects at Will County Station, 10 July 2002

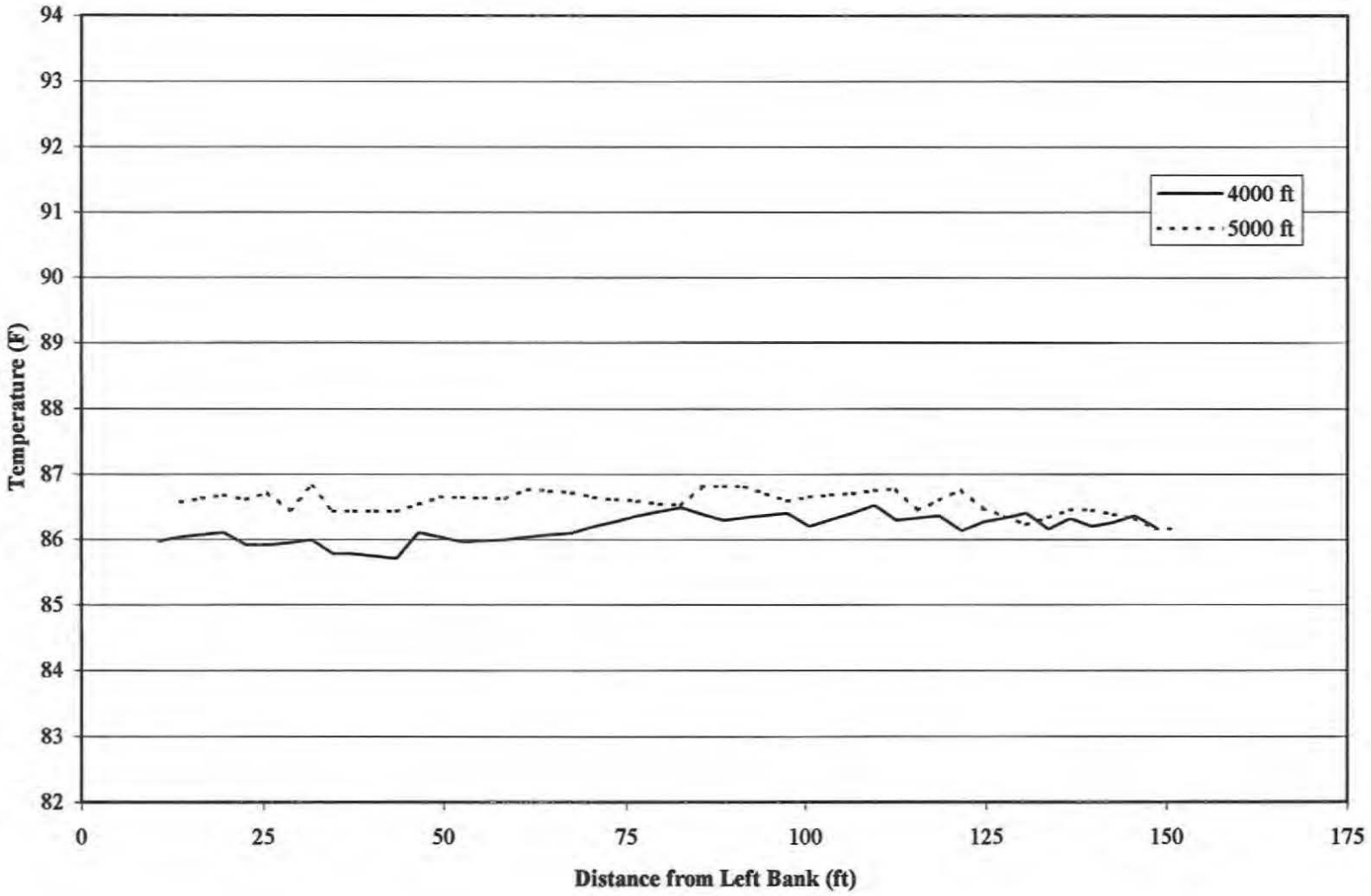


Table B-2 Surface Temperature Data near Will County Station, 10 July 2002

Distance (ft) from Left Bank	Transect										
	UPSTR	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
1.5	79.4										
4.5	79.6	79.7			89.1	88.9	88.3	88.3	87.4		
7.5	79.5	79.7	79.9		89.2	89.2	88.2	88.5	87.6		
10.5	79.7	79.7	79.7	86.5	89.3	89.0	88.3	88.3	87.4	86.0	
13.5	79.6	79.7	79.7	86.6	89.2	88.9	88.4	88.5	87.3	86.0	86.6
16.5	79.6	79.7	79.7	86.8	89.2	88.8	88.3	88.6	87.3	86.1	86.6
19.5	79.5	79.6	79.8	86.8	88.9	88.8	88.1	88.7	87.2	86.1	86.7
22.5	79.4	79.7	79.8	86.8	88.7	88.9	88.3	88.7	87.3	85.9	86.6
25.5	79.5	79.8	80.0	86.8	89.1	89.1	88.2	88.7	87.4	85.9	86.7
28.5	79.6	79.8	79.9	87.0	89.0	89.1	88.4	88.6	87.5	86.0	86.5
31.5	79.7	79.9	79.8	86.7	88.9	89.0	88.4	88.6	87.2	86.0	86.8
34.5	79.3	79.7	79.7	86.9	89.0	89.2	88.4	88.6	87.5	85.8	86.4
37.5	79.4	79.6	79.8	87.1	88.7	89.2	88.7	88.4	87.5	85.8	86.4
40.5	79.6	79.7	79.8	87.2	89.0	89.5	88.7	88.6	87.6	85.7	86.4
43.5	79.5	79.7	79.7	87.5	88.9	89.4	88.3	88.6	87.6	85.7	86.4
46.5	79.5	79.8	79.8	87.9	88.8	89.4	88.8	88.6	87.8	86.1	86.5
49.5	79.4	79.9	79.8	88.3	88.9	89.4	88.6	88.5	87.7	86.0	86.7
52.5	79.4	80.0	79.8	88.8	88.7	89.3	88.4	88.7	87.6	86.0	86.6
55.5	79.4	79.8	79.7	89.1	88.7	89.4	88.6	88.3	87.9	86.0	86.6
58.5	79.4	79.9	79.7	89.4	88.6	89.4	88.6	88.0	87.7	86.0	86.6
61.5	79.4	80.0	79.7	89.8	88.6	89.5	88.6	88.1	87.8	86.0	86.8
64.5	79.5	79.8	79.7	89.8	88.6	89.3	88.8	88.2	87.9	86.1	86.7
67.5	79.5	79.7	79.8	90.0	88.7	89.2	88.7	88.3	88.0	86.1	86.7
70.5	79.6	79.7	79.9	90.0	88.6	88.9	88.8	88.2	87.9	86.2	86.7
73.5	79.7	79.6	80.0	90.2	88.5	89.0	88.7	88.2	87.8	86.3	86.6
76.5	79.6	79.7	79.6	90.4	88.5	89.0	88.7	88.1	88.0	86.4	86.6
79.5	79.8	79.7	79.7	90.3	88.5	89.1	88.8	88.0	88.0	86.4	86.6
82.5	79.8	79.8	79.9	90.2	88.5	88.9	88.8	88.0	87.9	86.5	86.5
85.5	79.5	79.6	79.8	90.3	88.5	88.8	88.8	87.9	87.9	86.4	86.8
88.5	79.5	79.7	79.6	90.3	88.5	88.7	88.7	87.7	87.8	86.3	86.8
91.5	79.5	79.8	80.0	90.2	88.5	88.9	88.6	87.8	88.0	86.3	86.8
94.5	79.6	79.9	79.8	90.5	88.4	88.6	88.5	87.9	87.9	86.4	86.7
97.5	79.8	79.7	79.6	90.8	88.1	88.6	88.6	87.8	87.7	86.4	86.6
100.5	79.8	79.6	79.8	90.8	88.0	88.7	88.5	87.6	87.7	86.2	86.7
103.5	79.8	79.6	79.8	91.0	87.9	88.7	88.4	87.7	87.8	86.3	86.7
106.5	79.6	79.8	79.9	91.3	87.8	88.6	88.4	87.6	87.7	86.4	86.7
109.5	79.5	79.9	79.9	91.4	87.9	88.5	88.2		87.7	86.5	86.7
112.5	79.5	79.6	79.9	91.6	87.7	88.6	88.0		87.6	86.3	86.8
115.5	79.5	79.9	79.7	91.8	87.5	88.6	87.9		87.6	86.3	86.5
118.5	79.4	79.8	79.8	92.1	87.5	88.7	87.9		87.6	86.4	86.6
121.5	79.5	79.8	80.0	92.3	87.6		87.9		87.6	86.1	86.8
124.5	79.5	79.8	79.8	92.2	87.6		87.9		87.5	86.3	86.5
127.5	79.5	79.8	79.8	92.2	87.2		87.7		87.3	86.3	86.4
130.5	79.5	79.6	79.9	92.3	87.1		87.6		87.5	86.4	86.2
133.5	79.5	79.7	79.7	92.5	87.0		87.4		87.4	86.2	86.3
136.5	79.5	79.8	79.7	92.6	87.1		87.3		87.4	86.3	86.5
139.5	79.5	79.8	79.9	92.8	87.0		87.0		87.3	86.2	86.5

Table B-2 Surface Temperature Data near Will County Station, 10 July 2002

Distance (ft) from Left Bank	Transect								
	UPSTR	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
142.5	79.5	79.6	80.0	92.9	86.8		86.8		87.2	86.3	86.4
145.5	79.5	79.6	80.2	92.9	86.7		86.6		87.1	86.4	86.3
148.5	79.5	80.0	80.4	93.0	86.8		86.5		87.2	86.2	86.2
151.5	79.5	79.9	81.4	93.0					87.0		86.2
154.5	79.5		81.7								
157.5	79.5		82.0								
160.5	79.5		82.8								
163.5	79.8		83.3								
166.5			83.8								
169.5			84.8								
172.5			85.2								
175.5			86.1								
178.5			86.1								
181.5			86.1								
184.5			86.2								
187.5			86.6								
190.5			86.9								
193.5			87.7								
196.5			88.2								
199.5			88.7								
202.5			89.3								
205.5			90.0								
208.5			90.2								
211.5			90.5								
214.5			90.9								
217.5			91.3								
220.5			91.6								
223.5			91.9								
226.5			91.9								
229.5			92.0								
232.5			92.2								
235.5			92.5								
238.5			92.5								
241.5			92.6								

Figure B-3a
Surface Temperature along Horizontal Transects at Will County Station, 24 July 2002

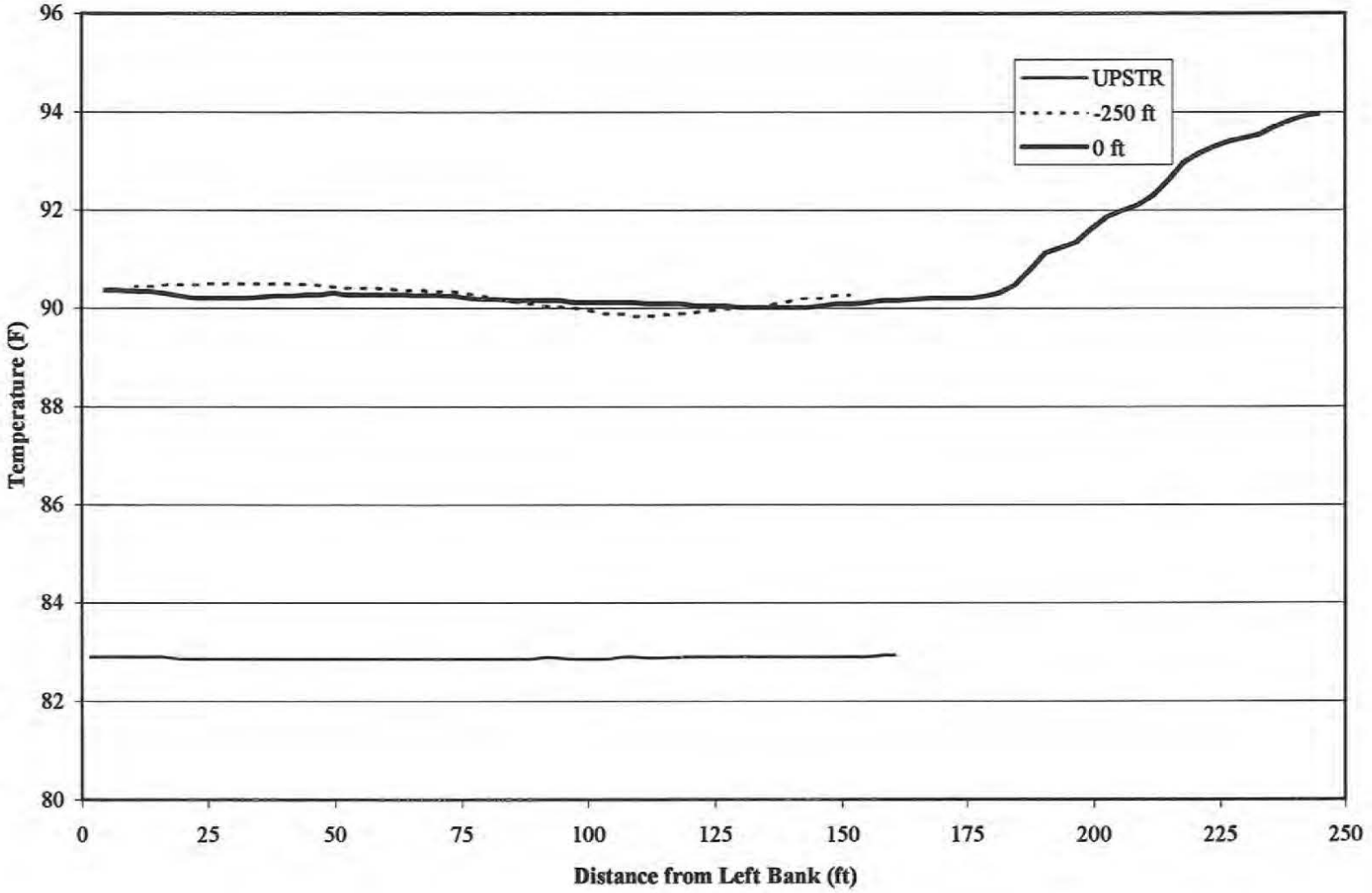


Figure B-3b
Surface Temperature along Horizontal Transects at Will County Station, 24 July 2002

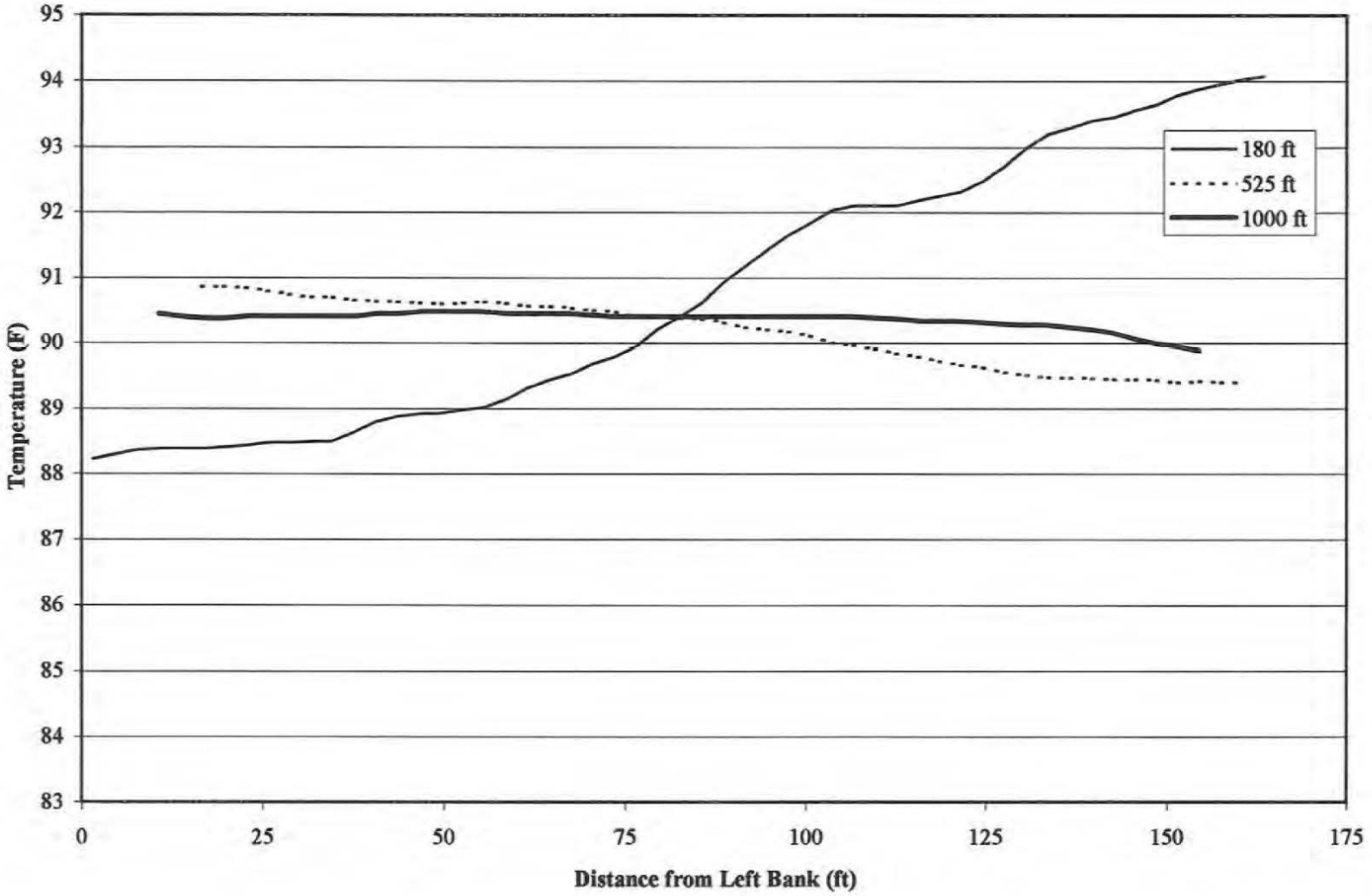


Figure B-3c
Surface Temperature along Horizontal Transects at Will County Station, 24 July 2002

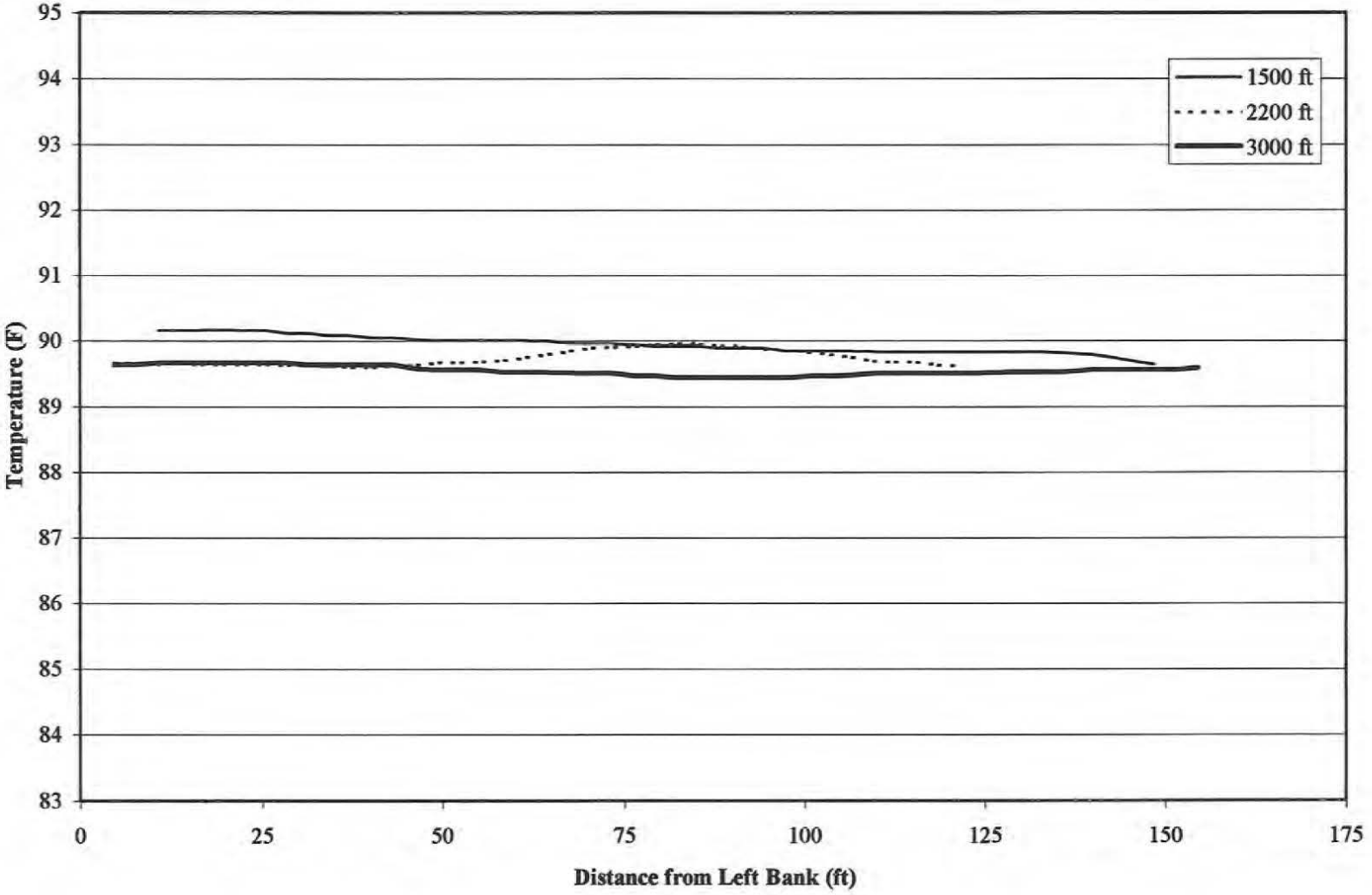


Figure B-3d
Surface Temperature along Horizontal Transects at Will County Station, 24 July 2002

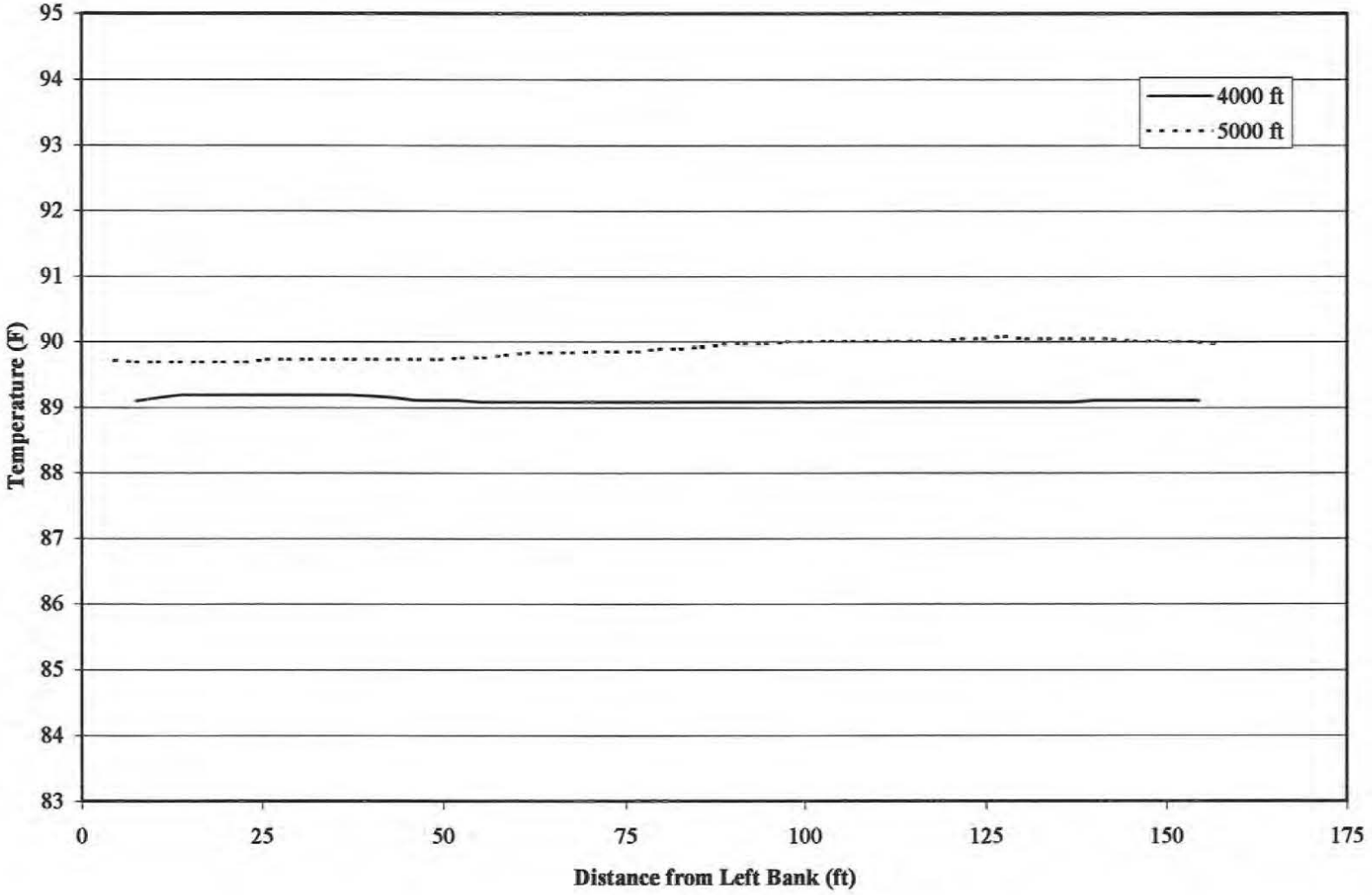


Table B-3 Surface Temperature Data near Will County Station, 24 July 2002

Distance (ft) from Left Bank	Transect UPSTR	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
1.5	82.9			88.2							
4.5	82.9		90.4	88.3				89.7	89.6		89.7
7.5	82.9		90.4	88.4				89.7	89.7	89.1	89.7
10.5	82.9	90.5	90.4	88.4		90.5	90.2	89.6	89.7	89.2	89.7
13.5	82.9	90.5	90.3	88.4		90.4	90.2	89.7	89.7	89.2	89.7
16.5	82.9	90.5	90.3	88.4	90.9	90.4	90.2	89.6	89.7	89.2	89.7
19.5	82.9	90.5	90.3	88.4	90.9	90.4	90.2	89.6	89.7	89.2	89.7
22.5	82.9	90.5	90.2	88.4	90.9	90.4	90.2	89.6	89.7	89.2	89.7
25.5	82.9	90.5	90.2	88.5	90.8	90.4	90.2	89.6	89.7	89.2	89.7
28.5	82.9	90.5	90.2	88.5	90.8	90.4	90.1	89.6	89.7	89.2	89.7
31.5	82.9	90.5	90.2	88.5	90.7	90.4	90.1	89.6	89.6	89.2	89.7
34.5	82.9	90.5	90.2	88.5	90.7	90.4	90.1	89.6	89.6	89.2	89.7
37.5	82.9	90.5	90.3	88.6	90.7	90.4	90.1	89.6	89.6	89.2	89.7
40.5	82.9	90.5	90.3	88.8	90.6	90.5	90.1	89.6	89.6	89.2	89.7
43.5	82.9	90.5	90.3	88.9	90.6	90.5	90.1	89.6	89.6	89.2	89.7
46.5	82.9	90.5	90.3	88.9	90.6	90.5	90.0	89.6	89.6	89.1	89.7
49.5	82.9	90.5	90.3	88.9	90.6	90.5	90.0	89.7	89.6	89.1	89.7
52.5	82.9	90.4	90.3	89.0	90.6	90.5	90.0	89.7	89.6	89.1	89.8
55.5	82.9	90.4	90.3	89.0	90.6	90.5	90.0	89.7	89.6	89.1	89.8
58.5	82.9	90.4	90.3	89.1	90.6	90.5	90.0	89.7	89.5	89.1	89.8
61.5	82.9	90.4	90.3	89.3	90.6	90.5	90.0	89.8	89.5	89.1	89.8
64.5	82.9	90.4	90.3	89.4	90.6	90.5	90.0	89.8	89.5	89.1	89.8
67.5	82.9	90.4	90.3	89.5	90.5	90.5	90.0	89.9	89.5	89.1	89.8
70.5	82.9	90.3	90.3	89.7	90.5	90.4	90.0	89.9	89.5	89.1	89.9
73.5	82.9	90.3	90.3	89.8	90.5	90.4	90.0	89.9	89.5	89.1	89.9
76.5	82.9	90.3	90.2	90.0	90.4	90.4	89.9	89.9	89.5	89.1	89.9
79.5	82.9	90.3	90.2	90.2	90.4	90.4	89.9	89.9	89.5	89.1	89.9
82.5	82.9	90.2	90.2	90.4	90.4	90.4	89.9	90.0	89.4	89.1	89.9
85.5	82.9	90.1	90.2	90.6	90.4	90.4	89.9	90.0	89.4	89.1	89.9
88.5	82.9	90.1	90.2	90.9	90.3	90.4	89.9	89.9	89.4	89.1	90.0
91.5	82.9	90.1	90.2	91.2	90.3	90.4	89.9	89.9	89.4	89.1	90.0
94.5	82.9	90.0	90.2	91.4	90.2	90.4	89.9	89.9	89.4	89.1	90.0
97.5	82.9	90.0	90.1	91.7	90.2	90.4	89.9	89.9	89.4	89.1	90.0
100.5	82.9	90.0	90.1	91.8	90.1	90.4	89.9	89.8	89.5	89.1	90.0
103.5	82.9	89.9	90.1	92.0	90.0	90.4	89.9	89.8	89.5	89.1	90.0
106.5	82.9	89.9	90.1	92.1	90.0	90.4	89.9	89.8	89.5	89.1	90.0
109.5	82.9	89.8	90.1	92.1	89.9	90.4	89.8	89.7	89.5	89.1	90.0
112.5	82.9	89.9	90.1	92.1	89.9	90.4	89.8	89.7	89.5	89.1	90.0
115.5	82.9	89.9	90.1	92.2	89.8	90.4	89.8	89.7	89.5	89.1	90.0
118.5	82.9	89.9	90.1	92.3	89.7	90.3	89.8	89.6	89.5	89.1	90.0
121.5	82.9	89.9	90.1	92.3	89.7	90.3	89.8	89.6	89.5	89.1	90.1
124.5	82.9	90.0	90.1	92.5	89.6	90.3	89.8		89.5	89.1	90.1
127.5	82.9	90.0	90.1	92.7	89.6	90.3	89.8		89.5	89.1	90.1
130.5	82.9	90.0	90.0	93.0	89.5	90.3	89.8		89.5	89.1	90.1
133.5	82.9	90.0	90.0	93.2	89.5	90.3	89.8		89.5	89.1	90.1
136.5	82.9	90.1	90.0	93.3	89.5	90.3	89.8		89.5	89.1	90.1
139.5	82.9	90.1	90.0	93.4	89.5	90.2	89.8		89.6	89.1	90.1

Table B-3 Surface Temperature Data near Will County Station, 24 July 2002

Distance (ft) from Left Bank	Transect									
	UPSTR	-250 ft	0 ft	180 ft	525 ft	1000 ft	1500 ft	2200 ft	3000 ft	4000 ft	5000 ft
142.5	82.9	90.2	90.0	93.5	89.4	90.2	89.8	89.6	89.1	90.1
145.5	82.9	90.2	90.1	93.6	89.4	90.1	89.7	89.6	89.1	90.0
148.5	82.9	90.3	90.1	93.7	89.4	90.0	89.7	89.6	89.1	90.0
151.5	82.9	90.3	90.1	93.8	89.4	90.0		89.6	89.1	90.0
154.5	82.9		90.1	93.9	89.4	89.9		89.6	89.1	90.0
157.5	82.9		90.2	94.0	89.4					90.0
160.5	82.9		90.2	94.0	89.4					
163.5			90.2	94.1						
166.5			90.2							
169.5			90.2							
172.5			90.2							
175.5			90.2							
178.5			90.3							
181.5			90.3							
184.5			90.5							
187.5			90.8							
190.5			91.1							
193.5			91.2							
196.5			91.4							
199.5			91.6							
202.5			91.9							
205.5			92.0							
208.5			92.1							
211.5			92.3							
214.5			92.6							
217.5			93.0							
220.5			93.2							
223.5			93.3							
226.5			93.4							
229.5			93.5							
232.5			93.5							
235.5			93.7							
238.5			93.8							
241.5			93.9							
244.5			94.0							

Figure B-4a
Surface Temperature along Horizontal Transects at Will County Station, 31 July 2002

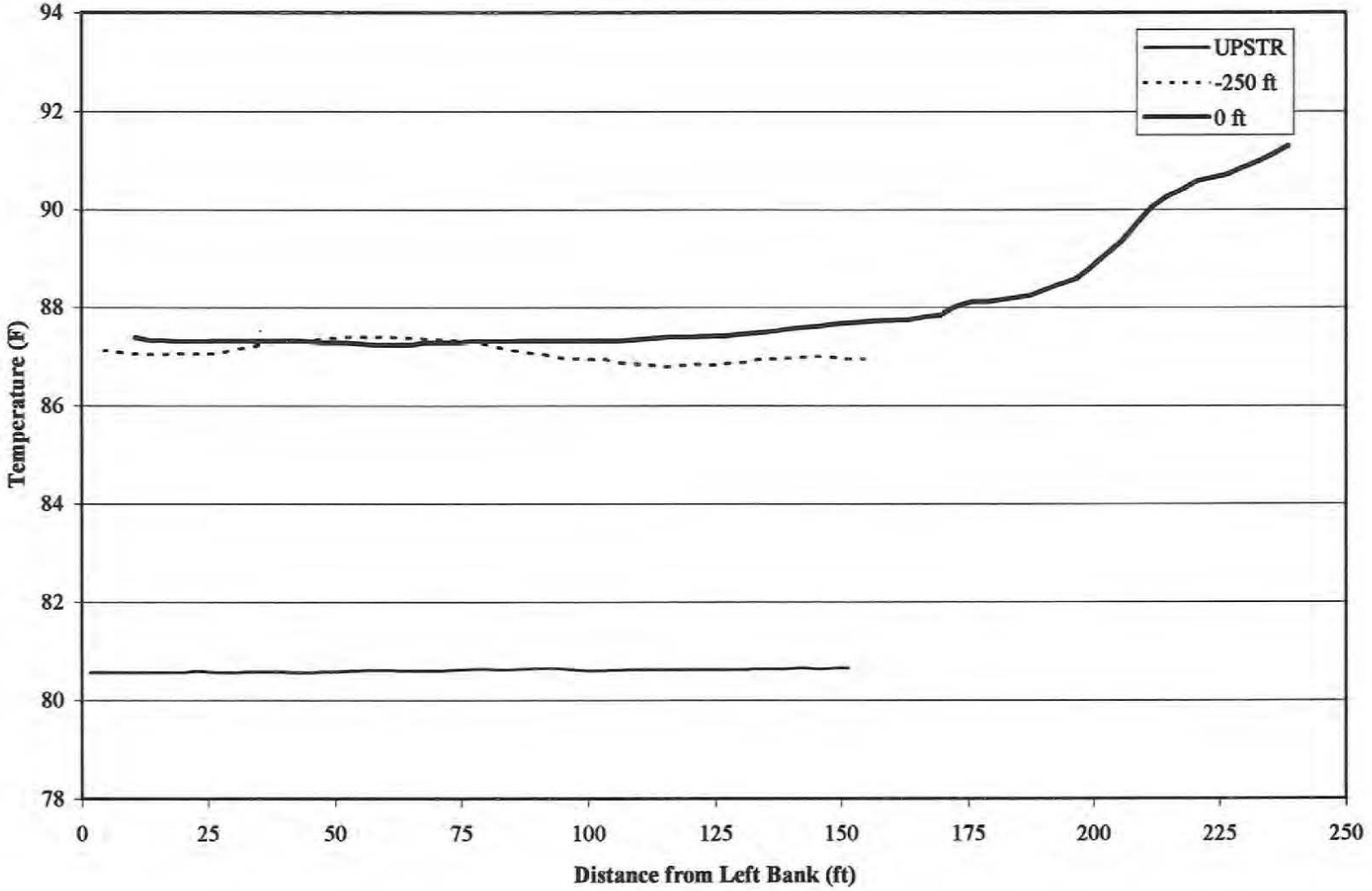


Figure B-4b
Surface Temperature along Horizontal Transects at Will County Station, 31 July 2002