PERFORMANCE REPORT

As Required by

THE ENDANGERED SPECIES ACT, SECTION 6

TEXAS
Grant No: E-1-7

ENDANGERED AND THREATENED SPECIES CONSERVATION

Project No. 49

Habitat Characterization of the Comal and San Marcos River Systems

Project Coordinator: Jackie M. Poole

Principal Investigator: Jackie M. Poole
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December 18, 1995

ABSTRACT

The habitat of Texas wild-rice (*Zizania texana*) was quantified according to various water, soil, light, and plant associate parameters. Randomly selected transects crossing sites with and without Texas wild-rice were administered at three different times in an attempt to capture both seasonal as well as flow variation. Additionally, the location and size of all naturally occurring stands of Texas wild-rice in the San Marcos River were monitored. Locations of stands were mapped both manually and using GPS technology. Data obtained from this study will be used to identify potential reintroduction sites for Texas wild-rice, and may also be helpful in analyzing the effects of springflow levels on this species.

PERFORMANCE REPORT

STATE: TEXAS **PROJECT NO.:** E-1-7

GRANT TITLE: Endangered and Threatened Species Conservation.

PERIOD COVERED: September 1, 1994 through August 31, 1995

PROJECT NUMBER: 49

PROJECT TITLE: Habitat characterization of the Comal and San Marcos River systems

PROJECT OBJECTIVE: To characterize the habitat of endangered species in the Comal and San Marcos River systems, especially in relation to spring flow.

SEGMENT OBJECTIVE: Complete habitat characterization transects for Texas wild-rice (*Zizania texana*) in the San Marcos River. Conduct annual monitoring of Texas wild-rice. Locate Texas wild-rice stands and reference points using GPS technology.

ACCOMPLISHMENTS

see Attachment

SIGNIFICANT DEVIATIONS

None

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29 Dec 1995
Date

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Section 6 Coordinator
Resource Protection Division

29 Dec. 1995
Date

TEXAS WILD-RICE (ZIZANIA TEXANA) HABITAT CHARACTERIZATION

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ABSTRACT

The habitat of Texas wild-rice (Zizania texana) was quantified according to various water, soil, light, and plant associate parameters. Randomly selected transects crossing sites with and without Texas wild-rice were administered at three different times in an attempt to capture both seasonal as well as flow variation. Additionally the location and size of all naturally occurring stands of Texas wild-rice in the San Marcos River were monitored. Locations of stands were mapped both manually and using GPS technology. Data obtained from this study will be used to identify potential reintroduction sites for Texas wild-rice, and may also be helpful in analyzing the effects of springflow levels on this species.

INTRODUCTION

The precise habitat requirements of Texas wild-rice have never been delineated. Although some experimental work has been done (Vaughan 1986, Fonteyn and Power undated, Power 1990, Rose and Power 1992, Rose and Power 1993), critical comparisons of both occupied and unoccupied sites in the natural habitat have not been conducted. An accurate habitat profile and map of Texas wild-rice stands combined with monitoring data indicating vigorous wild-rice stands would allow reliable selection of suitable reintroduction sites as well as provide additional data for analysis of the effects of springflow levels on Texas wild-rice.

METHODOLOGY

Channel-width transects were selected randomly for both Texas wild-rice sites and sites without Texas wild-rice. Texas wild-rice stand designations were sorted randomly to select sites with Texas wild-rice. For sites without Texas wild-rice, the upper San Marcos River was divided into 100 foot segments. These segments were then randomly sorted. Sites with Texas wild-rice which came up during this process were discarded. Transects were sampled on three separate occasions at various seasons to capture both seasonal variation as well as high and low flows. Thirty transects (15 Texas wild-rice and 15 non-Texas wild-rice sites) were randomly chosen each time (any previously sampled transects were eliminated), and various parameters were measured at selected points along each transect.

Dissolved oxygen, conductivity, Ph, and temperature were sampled at the mid-point of the transect with a hydrolab. These variables were only sampled at the mid-point of the transect because of

samples were taken from the 30 transects run August and September. In early July of both 1994 and 1995 the annual monitoring of Texas wild-rice was conducted. Data analysis has begun, but is still not complete. Preliminary results are discussed below.

Analysis of the GPS data is underway. Data for several stands was lost, and will have to be redone. However maps showing locations of Texas wild-rice stands have been drafted from the annual monitoring data. When the GPS data is associated with the current Texas wild-rice locational data, the accuracy level of stand location will increase. GPS data will be especially important for reference points.

DISCUSSION

Although data from the transects has not been completely analyzed, a few trends are apparent. Texas wild-rice occurs in less turbid, fairly shallow, and swift-moving water. The substrate in which it grows is sandy in nature as opposed to clayey. Most of the sites below the sewage treatment outfall are turbid, deep, and sluggish with a clay bottom. This may account for the scarcity of Texas wild-rice below the sewage treatment outfall.

CONCLUSIONS

After all of the transect data is analyzed, the habitat characteristics determining where Texas wild-rice occurs will be quantified. This information taken together with the monitoring data delimiting where the largest stands occur, should indicate Texas wild-rice habitat preferences. An accurate map of Texas wild-rice stands as well as the reference points used to locate the plants during the annual monitoring and the locations of the habitat characterization transects, will help not in only in the tracking of individual stands through time, but will also be of use in marking potential reintroduction areas.

LITERATURE CITED

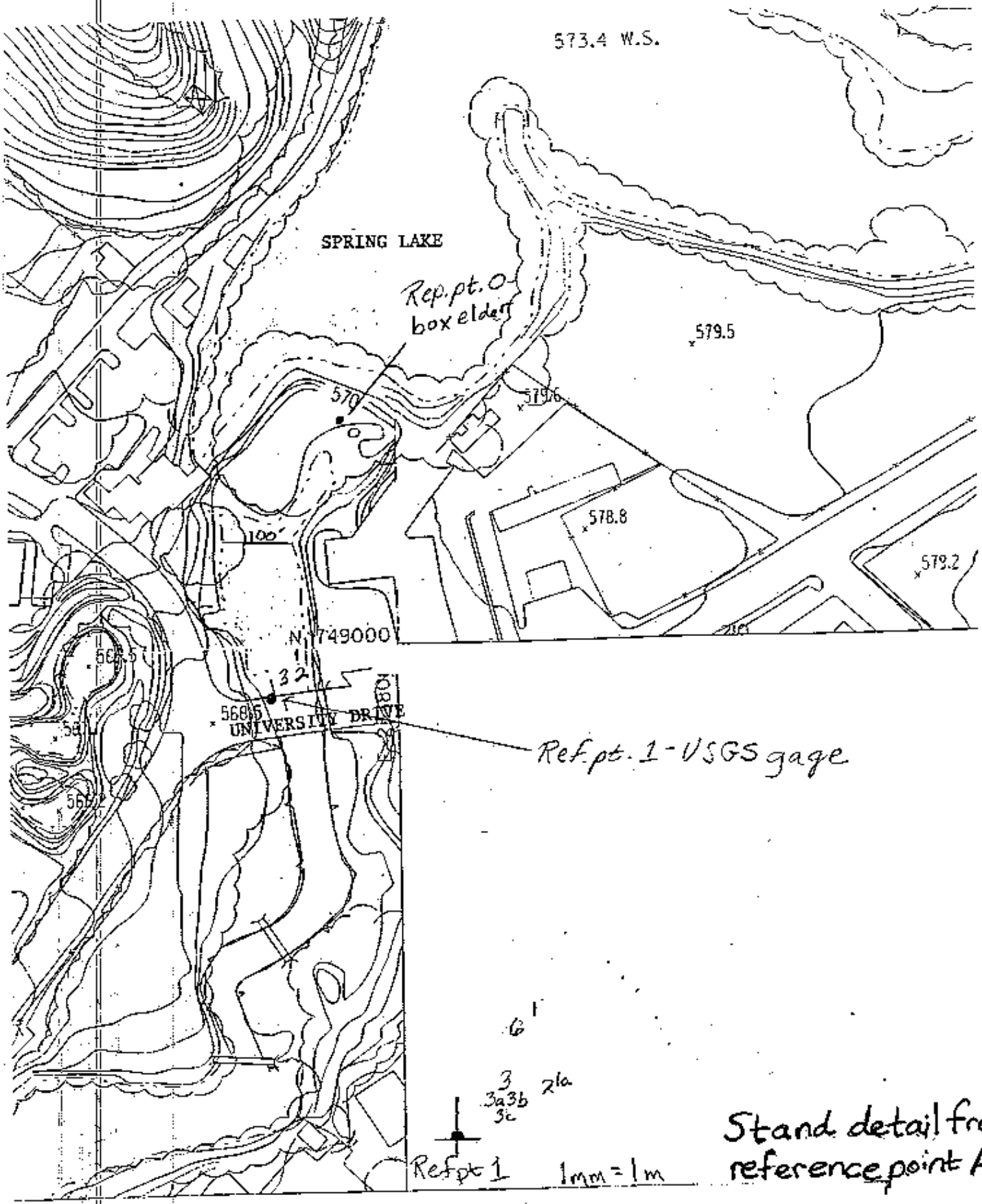
Fonteyn, P. J. and P. J. Power. Undated. Texas wildrice: interim report (contract # 14-16-0002-82-222). Submitted to U.S. Fish and Wildlife Service, Region 2.

Power, P. J. 1990. Effects of oxygen concentration and substrate on seedling growth of Zizania texana (Texas wild-rice). Masters Thesis, Southwest Texas State University. 35 pp.

Rose, F. and P. J. Power. 1992. Performance report on management and continued research on Texas wild-rice (Zizania texana). Submitted to U. S. Fish and Wildlife Service, Region 2.

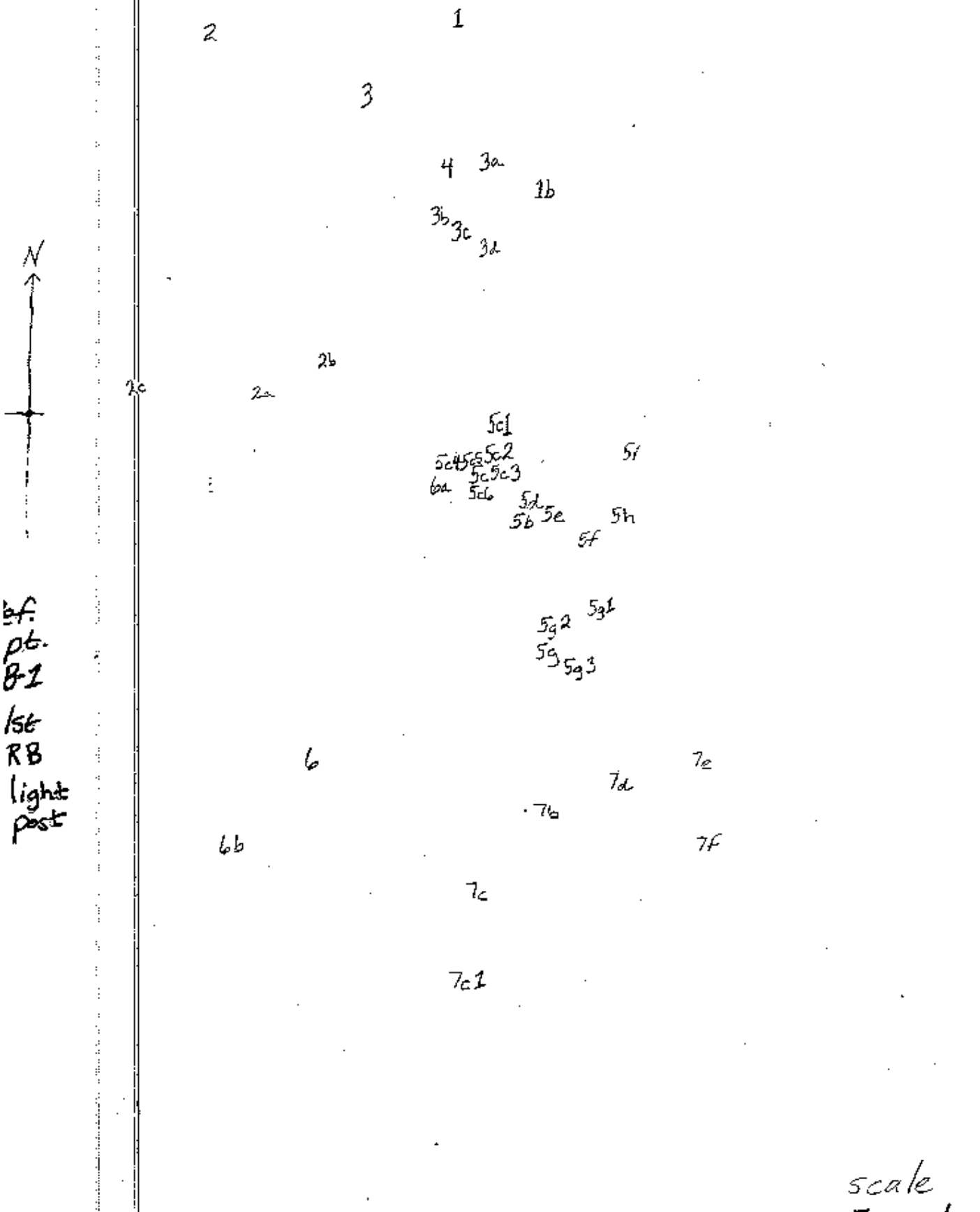
APPENDIX 1

Locations of Texas wild-rice in July 1995 and transect locations from the 1994 and 1995 Texas wild-rice habitat characterization study



SEGMENT A

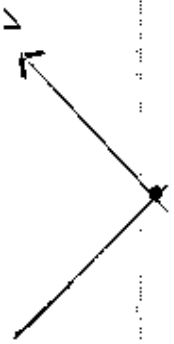
SCALE: 1" = 200'
0.5mm = 1m



bf. pt. B-1 1st RB light post

scale
5mm = 1m

B segment
Reference Point B-1



B segment
Reference Point B-3
DS corner of RE 3rd steps
scale 5mm = 1m

20a

20b

16

B segment
Reference Point B-6
LB hackberry, large trunk
scale 5mm = 1m

16b

25

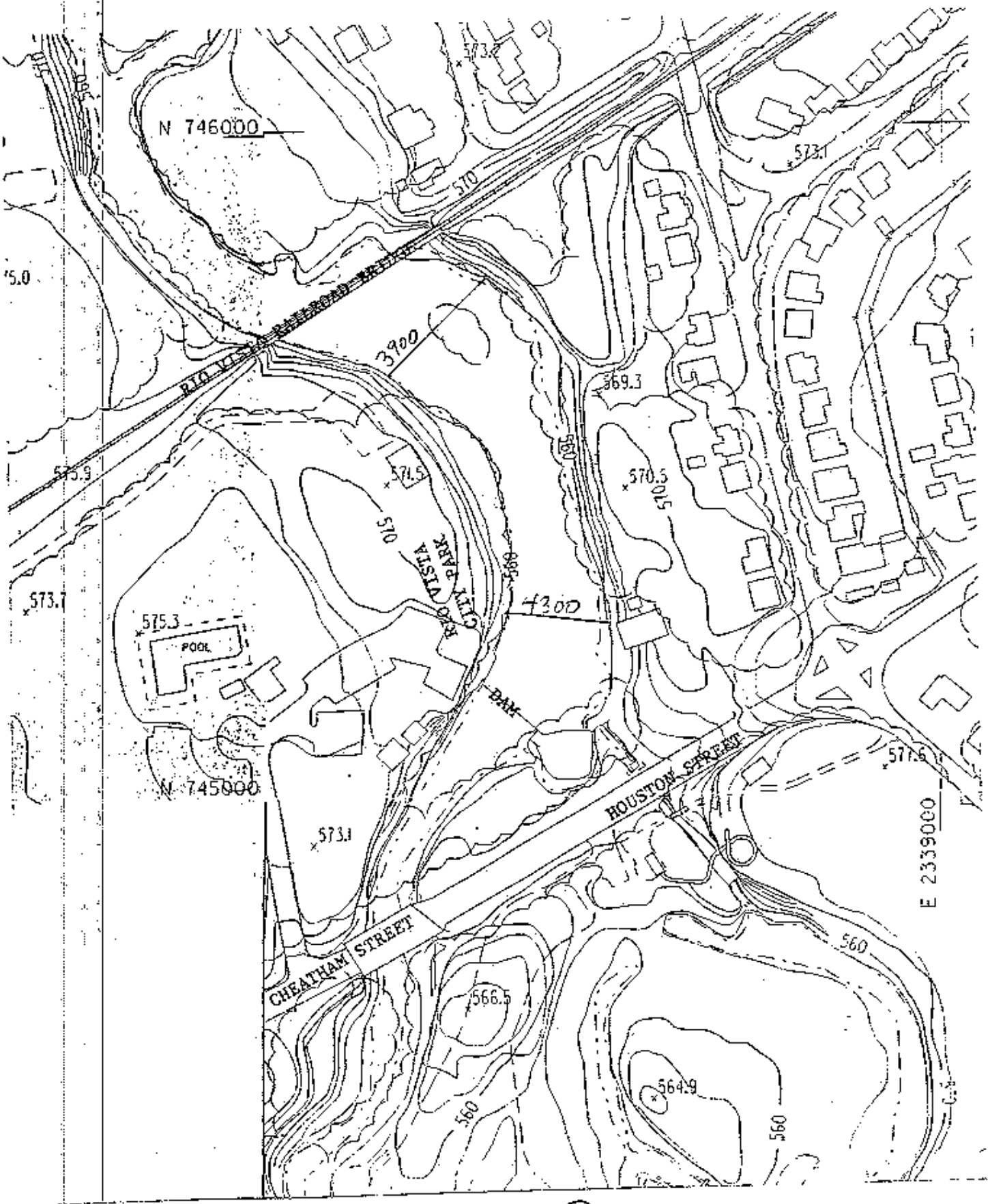
26

26a

25a

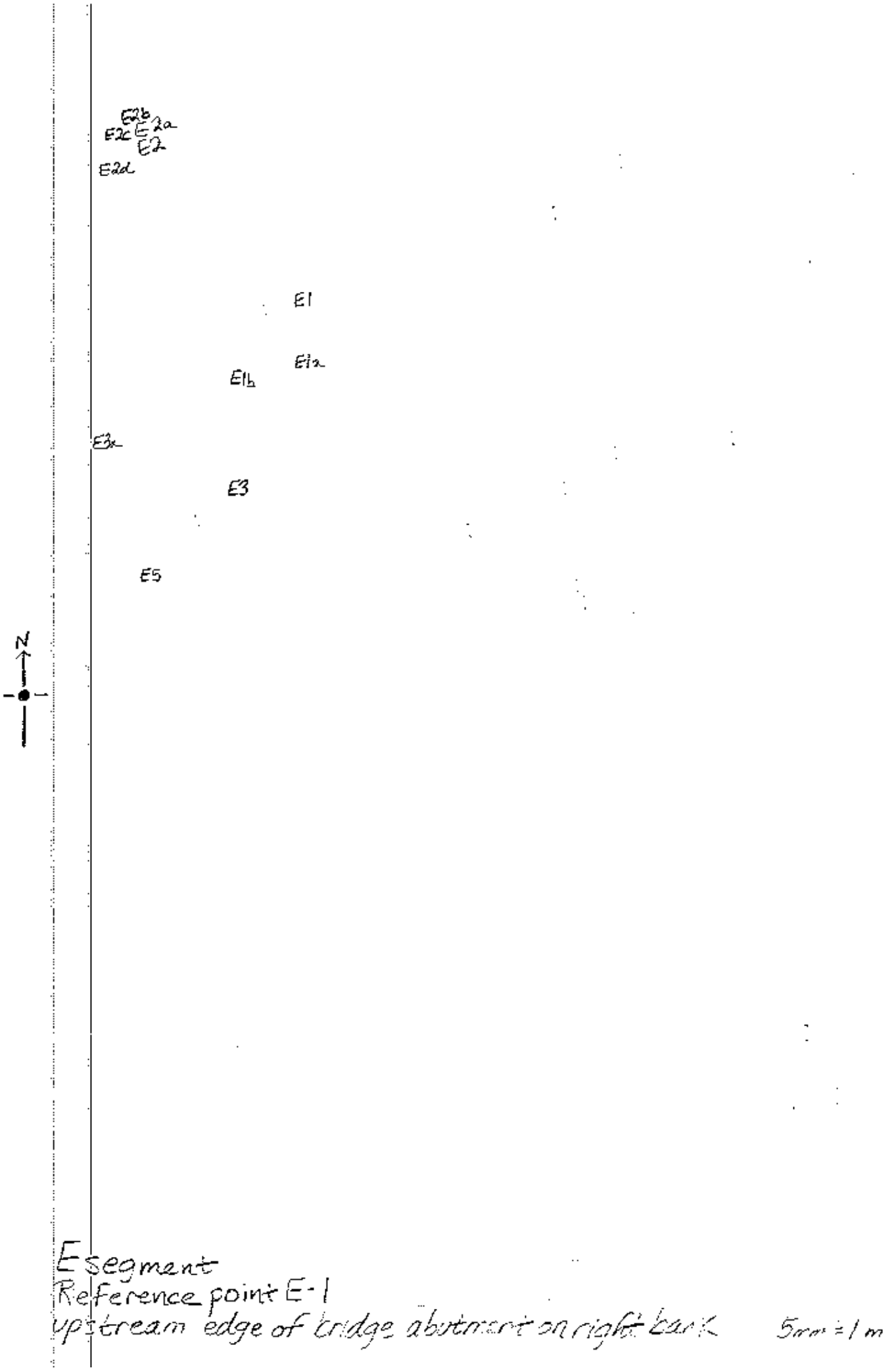
27

28



Segment D

SCALE 1" = 200'



E segment
Reference point E-1
upstream edge of bridge abutment on right bank 5mm = 1 m

E9c

E10a

E10b

E10

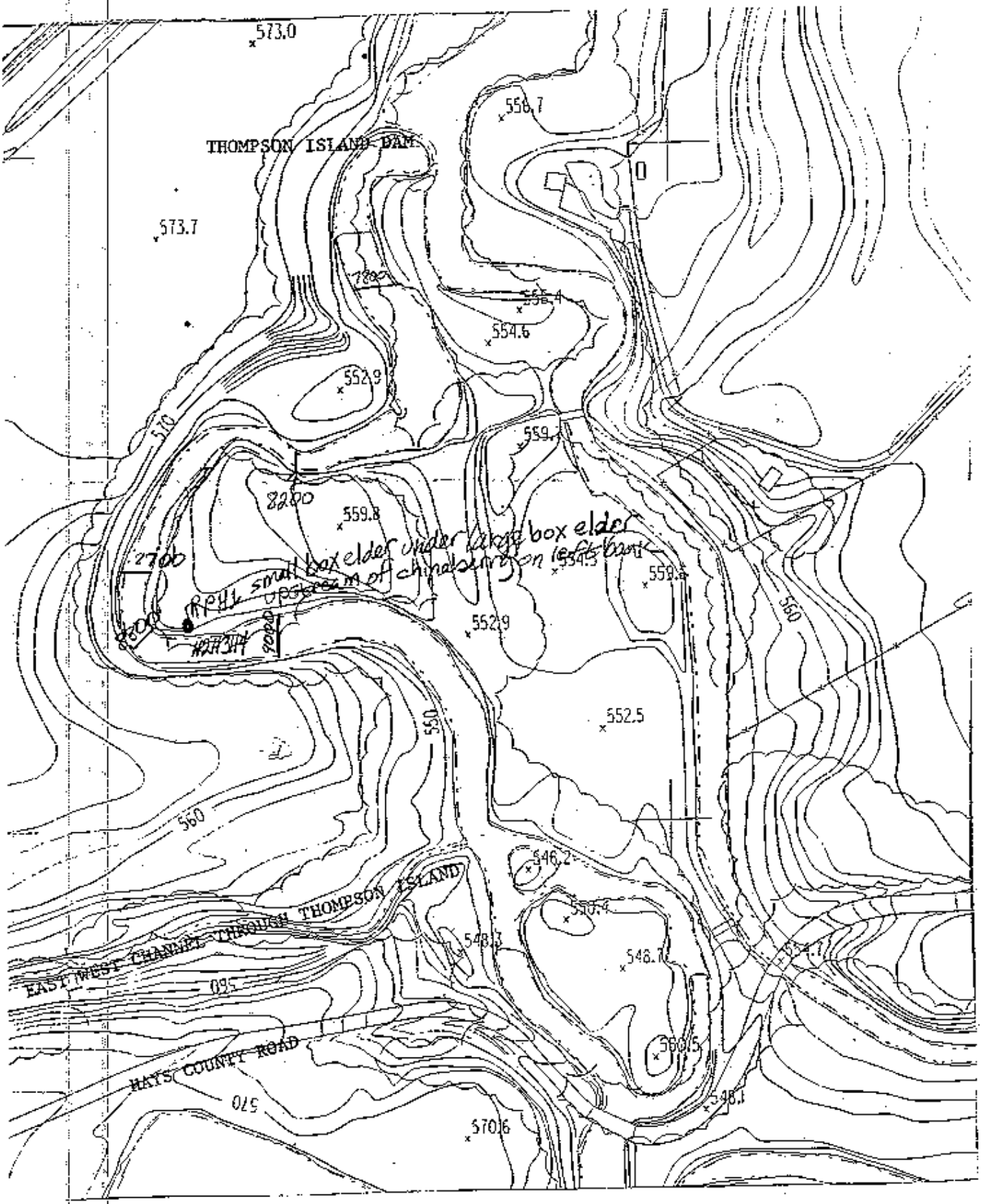
E11

E11a

E12

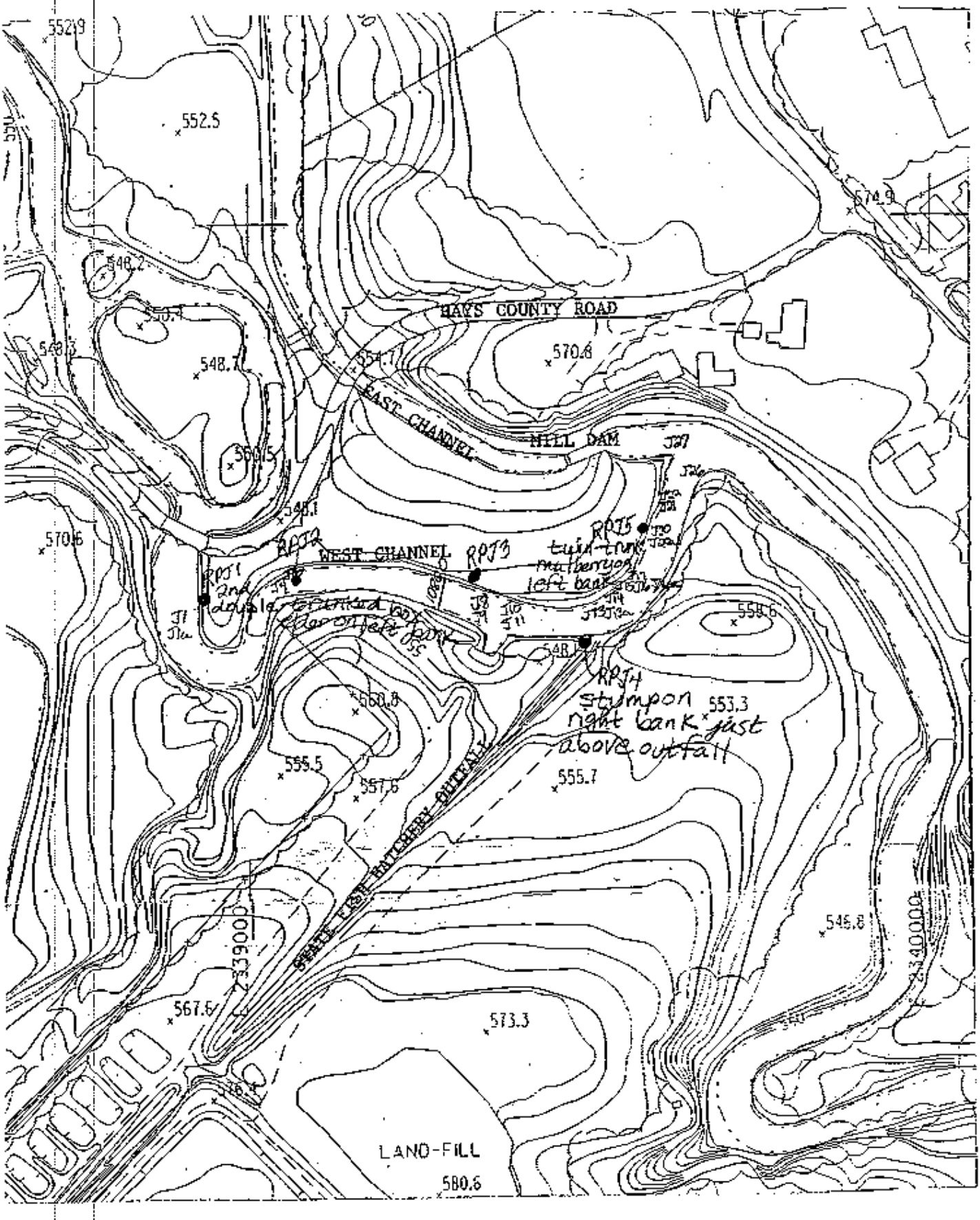
E segment
Reference point E-4
small box elder below dead Chinese tallow on right bank

5mm = 1m



SEGMENT H

SCALE: 1" = 200'
0.5mm = 1m

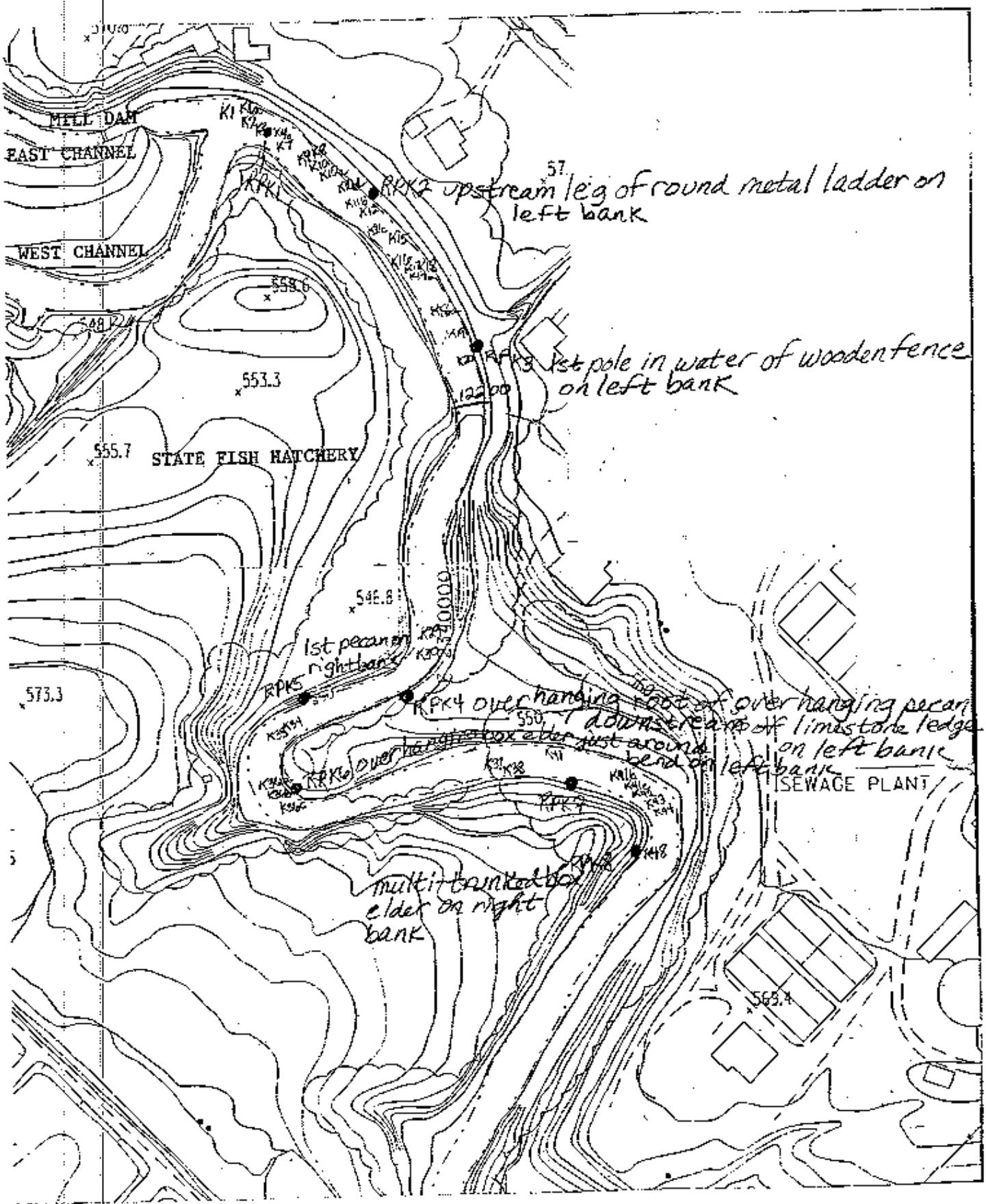


N

See following page for stand detail for reference points J2 + J3

SEGMENT J

SCALE: 1" = 200'

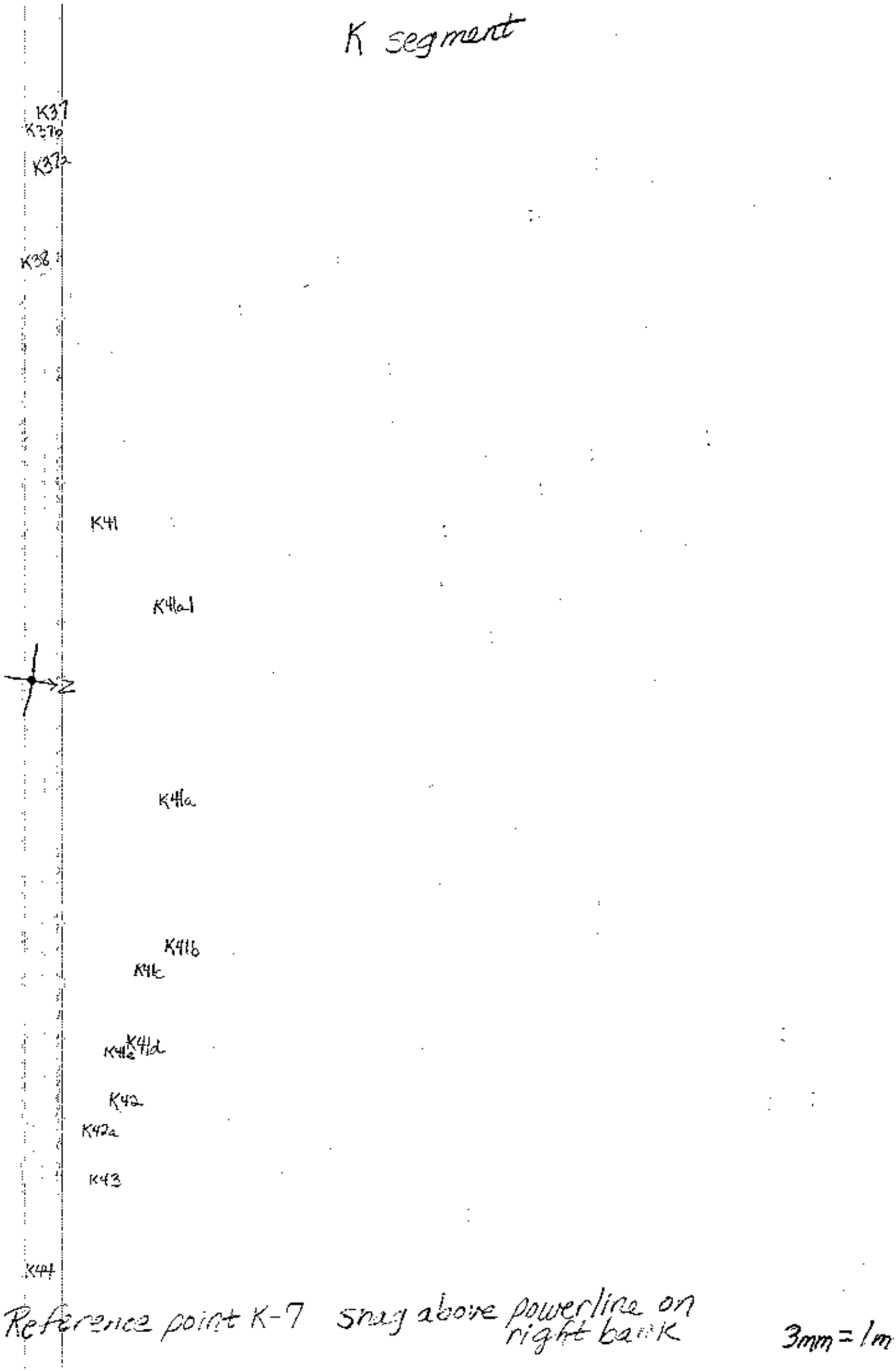


SEGMENT K

See following pages for stand detail for reference points K-1 & K-7

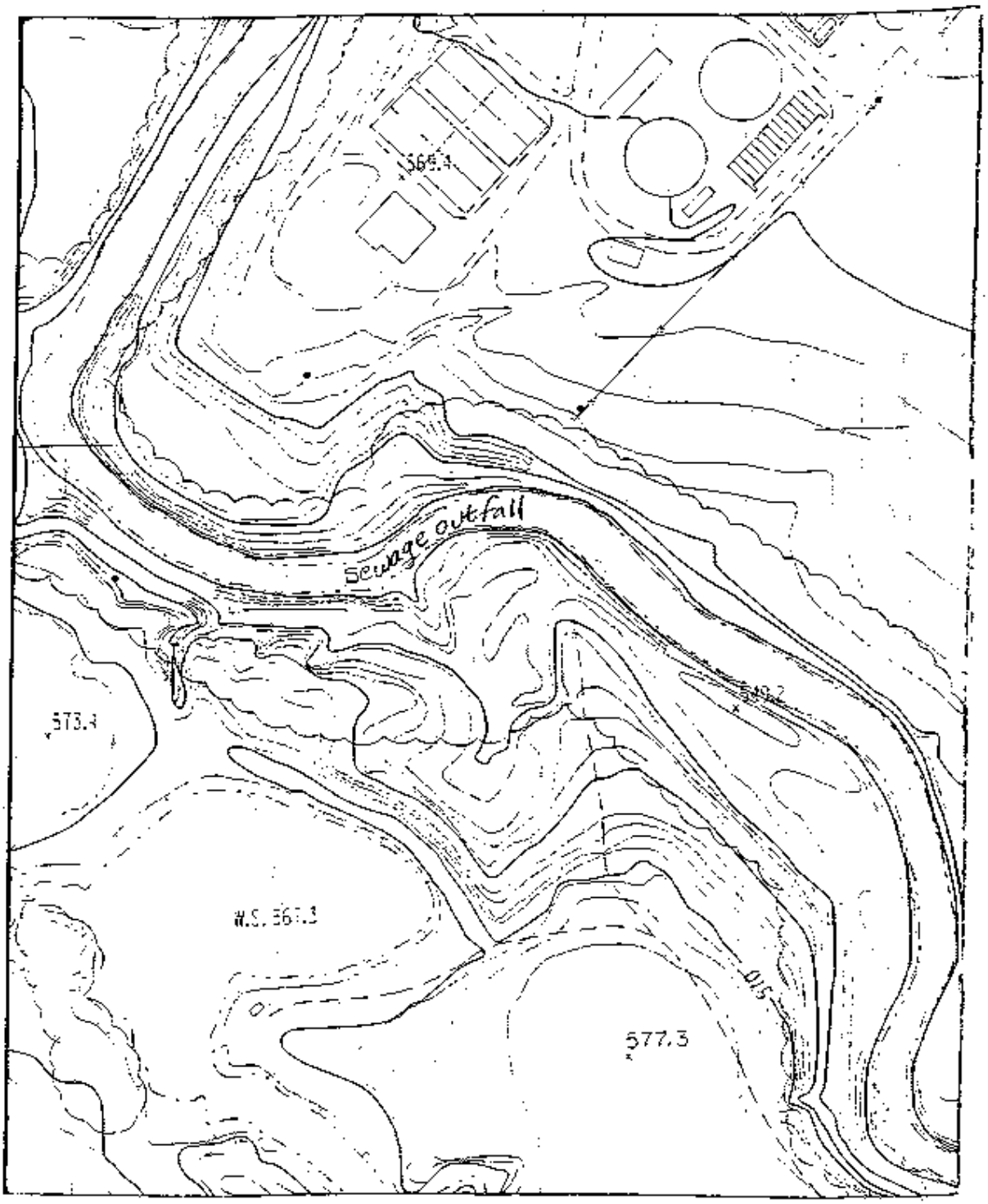
SCALE: 1" = 200'
0.5mm = 1m

K segment



Reference point K-7 snag above powerline on right bank

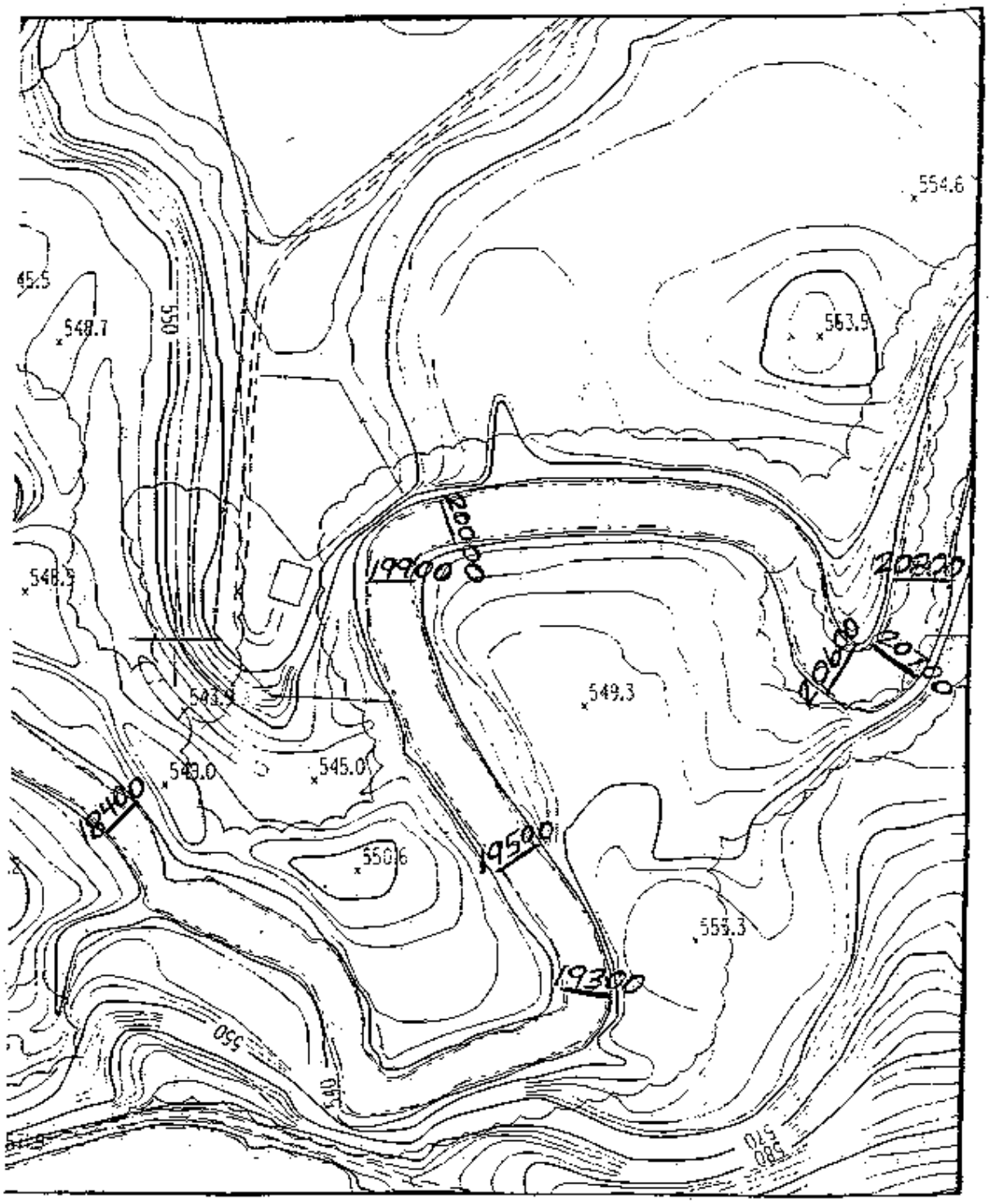
3mm = 1m



N

SEGMENT M

SCALE: 1"=200'
0.5mm=1m



N

SEGMENT M

SCALE: 1"=200'
0.5mm=1m

APPENDIX 2

Descriptive detail for reference points from 1989 to 1995

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)						
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
b5	mia	mia	8.7	nd	9.2	9.2	8.9		b5	mia	mia	269	285	260	260	264
b5a	mia	mia	7.5	nd	7	7.6	dne		b5a	mia	mia	284	315	255	251	dne
b5b	18.99	15.6	15.7	nd	15.7	dne	dne		b5b	280	279	291	275	286	dne	dne
b5c	17.3	17.2	dne	dne	dne	dne	dne		b5c	276	269	dne	dne	dne	dne	dne
b5c1	17.65	dne	dne	dne	dne	dne	dne		b5c1	270	dne	dne	dne	dne	dne	dne
b5c2	17.58	dne	dne	dne	dne	dne	dne		b5c2	274	dne	dne	dne	dne	dne	dne
b5c3	17.8	dne	dne	dne	dne	dne	dne		b5c3	276	dne	dne	dne	dne	dne	dne
b5c4	16.4	dne	dne	dne	dne	dne	dne		b5c4	276	dne	dne	dne	dne	dne	dne
b5c5	16.7	dne	dne	dne	dne	dne	dne		b5c5	276	dne	dne	dne	dne	dne	dne
b5c6	17.2	dne	dne	dne	dne	dne	dne		b5c6	278	dne	dne	dne	dne	dne	dne
b5d	19	18.9	dne	dne	dne	dne	dne		b5d	278	268	dne	dne	dne	dne	dne
b5e	20.1	20	dne	dne	dne	dne	dne		b5e	279	271	dne	dne	dne	dne	dne
b5f	21.15	20.8	dne	dne	dne	dne	dne		b5f	282	278	dne	dne	dne	dne	dne
b5g	21.35	21.8	dne	dne	dne	dne	dne		b5g	293	296	dne	dne	dne	dne	dne
b5g1	22.4	dne	dne	dne	dne	dne	dne		b5g1	288	dne	dne	dne	dne	dne	dne
b5g2	21.25	dne	dne	dne	dne	dne	dne		b5g2	291	dne	dne	dne	dne	dne	dne
b5g3	22.6	dne	dne	dne	dne	dne	dne		b5g3	294	dne	dne	dne	dne	dne	dne
b5h	22.6	22.4	dne	dne	dne	dne	dne		b5h	278	265	dne	dne	dne	dne	dne
b5i	22.8	22.9	dne	dne	dne	dne	dne		b5i	273	264	dne	dne	dne	dne	dne
b6	16.75	19.7	17.55	nd	13.9	13.7	12		b6	319	319	332	319	315	318	304
b6a	15.7	15.7	16.35	dne	dne	dne	dne		b6a	279	279	324	dne	dne	dne	dne
b6b	17.8	17.9	dne	dne	dne	dne	dne		b6b	334	330	dne	dne	dne	dne	dne
b7	RPB2	23.9	23.6	nd	22.9	23.4	12.9		b7	RPB2	335	338	320	327	327	318
b7a	RPB2	25.8	mia	nd	dne	dne	dne		b7a	RPB2	328	mia	340	dne	dne	dne
b7b	24.55	24.5	dne	dne	dne	dne	dne		b7b	306	299	dne	dne	dne	dne	dne
b7c	24.85	25	dne	dne	dne	dne	dne		b7c	315	311	dne	dne	dne	dne	dne
b7c1	26.95	dne	dne	dne	dne	dne	dne		b7c1	321	dne	dne	dne	dne	dne	dne
b7d	26.2	26	dne	dne	dne	dne	dne		b7d	300	296	dne	dne	dne	dne	dne
b7e	28.6	28.6	dne	dne	dne	dne	dne		b7e	296	284	dne	dne	dne	dne	dne
b7f	30.3	30.5	dne	dne	dne	dne	dne		b7f	301	287	dne	dne	dne	dne	dne
Reference point B-2 = downstream edge of second set of steps on right bank																	
b7	6.6	RPB1	RPB1	RPB1	RPB1	RPB1	RPB1		b7	166	RPB1	RPB1	RPB1	RPB1	RPB1	RPB1
b7a	5.5	RPB1	mia	RPB1	dne	dne	dne		b7a	220	RPB1	mia	RPB1	dne	dne	dne
b8	3.1	2.8	2.35	nd	2.6	3.1	8.1		b8	255	229	252	235	210	210	190

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)						
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
b13a	RPB3	RPB3	RPB3	dne	dne	dne	dne		b13a	RPB3	RPB3	RPB3	dne	dne	dne	dne
Reference point B-3 = downstream of 3rd steps on right bank																
b13	8.97	RPB2	RPB2	RPB2	RPB2	RPB2	RPB2		b13	242	RPB2	RPB2	RPB2	RPB2	RPB2	RPB2
b13a	7.55	7.55	7.42	dne	dne	dne	dne		b13a	30	37	35	dne	dne	dne	dne
	In 1992 b14 used the end of the 1st footbridge on the left bank as a reference point															
	In 1989 b14 used the 3rd light post on the right bank as a reference point															
b14	28	28	28.1	nd	mia	mia	12.5		b14	12	18	18	50	mia	mia	299
b14a	10.25	10.35	dne	dne	dne	dne	dne		b14a	315	322	dne	dne	dne	dne	dne
b14b	10.86	11.2	dne	dne	dne	dne	dne		b14b	347	346	dne	dne	dne	dne	dne
b14c	12.5	12.68	dne	dne	dne	dne	dne		b14c	311	310	dne	dne	dne	dne	dne
b14d	15.5	14.98	dne	dne	dne	dne	dne		b14d	338	359	dne	dne	dne	dne	dne
b14e	15.45	15.5	dne	dne	dne	dne	dne		b14e	351	355	dne	dne	dne	dne	dne
b14f	mia	16.8	dne	dne	dne	dne	dne		b14f	mia	357	dne	dne	dne	dne	dne
b14g	19.2	19.38	dne	dne	dne	dne	dne		b14g	14	9	dne	dne	dne	dne	dne
b14h	22.42	22.63	dne	dne	dne	dne	dne		b14h	2	21	dne	dne	dne	dne	dne
Reference Point B-4 = pointed corner above four holes in concrete on left bank																
	In 1992 b15 used the end of the 2nd footbridge on the left bank as a reference point															
	In 1989 b15 used the 3rd light post on the right bank as a reference point															
b15	16	15.4	3.8	nd	mia	mia	10.8		b15	328	326	152	50		mia	316
b15a	mia	mia	15.8	dne	dne	dne	dne		b15a	mia	mia	147	dne	dne	dne	dne
b15b	mia	mia	12.1	dne	dne	dne	dne		b15b	mia	mia	138	dne	dne	dne	dne
b15c	5.85	12.65	12.5	dne	dne	dne	dne		b15c	8	186	118	dne	dne	dne	dne
b15d	18.65	18.6	18.8	dne	dne	dne	dne		b15d	145	165	139	dne	dne	dne	dne
	In 1993 b15e used the downstream corner of the concrete left bank upstream of the old diving board as a															
		reference point														
b15e	mia	mia	3	dne	dne	dne	dne		b15e	mia	mia	23	dne	dne	dne	dne
	In 1993 b15f used the upstream corner of the steps below the swim ladder on the left bank as a reference															
		point														
b15f	28.2	9.2	11	dne	dne	dne	dne		b15f	330	321	2	dne	dne	dne	dne
b15g	17.71	17.8	dne	dne	dne	dne	dne		b15g	135	156	dne	dne	dne	dne	dne
b15h	9.05	10.8	dne	dne	dne	dne	dne		b15h	356	359	dne	dne	dne	dne	dne
b15i	13.1	dne	dne	dne	dne	dne	dne		b15i	126	dne	dne	dne	dne	dne	dne
b15j	29	dne	dne	dne	dne	dne	dne		b15j	348	dne	dne	dne	dne	dne	dne
b16	see reference point B-6								b16	see reference point B-6						

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)					
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
b31	RPB7	RPB7	33.3	dne	dne	dne	dne		b31	RPB7	RPB7	249	dne	dne	dne	dne
Reference Point B-7 = iron ring in the 1st small concrete slab in an opening below light pole #3 on																
	the left bank															
b29	14.25	14.3	RPB6	dne	dne	dne	dne		b29	117	108	RPB6	dne	dne	dne	dne
b30	17.9	17.9	RPB6	dne	dne	dne	dne		b30	123	123	RPB6	dne	dne	dne	dne
b31	19.35	18.9	RPB6	dne	dne	dne	dne		b31	92	90	RPB6	dne	dne	dne	dne
Reference Point B-8 = upstream point of concrete trough on left bank																
	In 1993 b32, b33, & b34 used an unrecorded reference point															
b32	16.15	16.3	25.8	dne	dne	dne	dne		b32	132	130	239	dne	dne	dne	dne
b33	mia	33.3	12.3	dne	dne	dne	dne		b33	mia	150	265	dne	dne	dne	dne
b34	24.65	24.85	23.8	dne	dne	dne	dne		b34	38	218	315	dne	dne	dne	dne
b34a	26.95	27.2	dne	dne	dne	dne	dne		b34a	108	110	dne	dne	dne	dne	dne
b35	mia	28.35	dne	dne	dne	dne	dne		b35	mia	138	dne	dne	dne	dne	dne
Segment c = Hopkins Road railroad bridge to Rio Vista railroad bridge																
Reference point C-1 = first Texas oak on left bank below railroad bridge																
c1	15.4	15.45	15.6	mia	14.5	15.7	15.7		c1	10	15	15	mia	11	14	12
c2	21.7	21.5	21.1	dne	21	21.1	21.9		c2	21	24	25	10	28	25	19
	In 1989 the reference points for c3 were the limestone pillar of railroad trestle on right bank & the center of															
		house on the left bank (both angles)														
c3	mia	mia	mia	mia	mia	13.5	138		c3	mia	mia	mia	mia	mia	73	102
Reference point C-2 = upstream edge of concrete drainage ditch on left bank																
c3a	15.75	dne	dne	dne	dne	dne	dne		c3a	59	dne	dne	dne	dne	dne	dne
Reference point C-3 = base of chinaberry in square hole in concrete on left bank																
	In 1989 the reference points for c4 were the limestone pillar of railroad trestle on right bank & the center of															
		house on the left bank (both angles)														
c4	mia	mia	mia	mia	mia	21	172		c4	mia	mia	mia	mia	mia	40	95
c4a	18.29	20.1	19.65	dne	dne	dne	dne		c4a	125	134	131	dne	dne	dne	dne
Reference point C-4 = base of overhanging willow in concrete below steps on left bank																
	In 1989-1992 c5a, c5b, & c5c used a metal post in concrete steps in water near right bank															
c5 = c5a									c5 = c5a							
c5a	30.8	32.7	31.5	nd	7.5	8.4	8.4		c5a	5	7	2	50	227	231	231
c5b	32.7	33.85	30.2	nd	20.7	21.5	dne		c5b	341	341	342	330	235	252	dne
c5c	mia	mia	mia	mia	mia	28.1	dne		c5c	mia	mia	mia	mia	mia	305	dne

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)					
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
Segment e = Dam above Cheatum Street to low point south side of Glover's Island																
Reference point E-1 = upstream edge of the bridge abutment on the right bank																
e1	19.5	19.35	19.2	nd	19	18.9	18.9		e1	215	212	190	205	209	209	201
e1a	17.4	16.85	dne	dne	dne	dne	dne		e1a	220	212	dne	dne	dne	dne	dne
e1b	15.6	dne	dne	dne	dne	dne	dne		e1b	214	dne	dne	dne	dne	dne	dne
e2	22.4	24.35	24.7	nd	24.6	24.3	24.1		e2	193	194	160	185	191	190	183
e2a	23.3	dne	dne	dne	dne	dne	dne		e2a	192	dne	dne	dne	dne	dne	dne
e2b	23.7	dne	dne	dne	dne	dne	dne		e2b	190	dne	dne	dne	dne	dne	dne
e2c	22.9	dne	dne	dne	dne	dne	dne		e2c	189	dne	dne	dne	dne	dne	dne
e2d	21.5	dne	dne	dne	dne	dne	dne		e2d	189	dne	dne	dne	dne	dne	dne
e3	11.95	11.9	11.2	nd	13.5	13.4	13		e3	227	224	160	208	199	200	192
e3a	10.85	10.75	dne	dne	dne	dne	dne		e3a	197	193	dne	dne	dne	dne	dne
e4	mia	mia	mia	mia	mia	mia	10.6		e4	mia	mia	mia	mia	mia	mia	184
e5	6.9	7.05	7.8	nd	7.5	7.4	7		e5	226	227	203	nd	225	225	214
Reference point E-2 = downstream edge of sidewalk under bridge on the right bank																
e6	mia	mia	mia	mia	mia	7	6.5		e6	mia	mia	mia	mia	mia	258	266
e6a	mia	mia	13.8	dne	dne	dne	dne		e6a	mia	mia	284	dne	dne	dne	dne
e6b	mia	15.6	15.3	dne	dne	dne	dne		e6b	mia	279	280	dne	dne	dne	dne
e6c	mia	mia	16.3	dne	dne	dne	dne		e6c	mia	mia	295	dne	dne	dne	dne
e6d	17.8	18.4	18.5	dne	dne	dne	dne		e6d	305	297	305	dne	dne	dne	dne
e6e	dne	dne	dne	dne	dne	dne	dne		e6e	dne	dne	dne	dne	dne	dne	dne
e7 = e7a									e7 = e7a							
	In 1989 e7a and e7b were recorded as two clumps but only one distance and angle were recorded															
e7a	36.3	35.95	36	nd	35.5	35.5	35.5		e7a	329	321	332	270	325	319	328
e7b	31.95	36	mia	mia	mia	mia	35.5		e7b	316	340	mia	mia	mia	mia	328
e10	RPE4	RPE4	RPE4	RPE2	RPE4	RPE4	RPE4		e10	RPE4	RPE4	RPE4	RPE2	RPE4	RPE4	RPE4
Reference point E-3 = 4th willow on right bank, two-trunked																
	In 1989 e8a & e8b were recorded as two clumps but only one distance & angle were taken using the e6															
		reference point														
e8 = e8a									e8 = e8a							
e8a	18.8	19.84	19.95	nd	19.9	19.9	50		e8a	303	302	302	275	300	300	352
e8b	7.72	mia	mia	nd	23.8	24.1	50		e8b	274	mia	mia	290	340	310	352
e8c	mia	mia	mia	nd	26.4	dne	dne		e8c	mia	mia	mia	310	338	dne	dne
e8d	mia	mia	14.8	dne	dne	dne	dne		e8d	mia	mia	248	dne	dne	dne	dne

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)					
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
e13	mia	11	11	nd	12.5	12.8	37		e13	mia	180	170	200	180	180	196
e14	25.6	26.4	25.3	mia	25.8	27.3	26.9		e14	300	300	300	mia	294	293	299
Segment f = low point south side of Glover's Island to just above South I-35 access road																
Reference point E-5 = upward pointing branch of an overhanging dead box elder in the river bend																
	on the right bank															
f1	mia	mia	mia	mia	mia	mia	42.6		f1	mia	mia	mia	mia	mia	mia	285
f2	RPF1	45.8	44.4	nd	45.2	46.65	46.4		f2	RPF1	310	312	75	308	303	310
f4	RPF2	RPF2	RPF2	nd	RPF2	RPF2	RPF2		f4	RPF2	RPF2	RPF2	300	RPF2	RPF2	RPF2
Reference point F-1 = box elder downstream of a sandy beach with elderberries on the left bank																
f2	16.2	RPE5	RPE5	RPE5	RPE5	RPE5	RPE5		f2	69	RPE5	RPE5	RPE5	RPE5	RPE5	RPE5
f3	15.75	17.8	15.62	mia	mia	RPF2	RPF2		f3	30	70	8	mia	mia	RPF2	RPF2
Reference point F-2 = first vertical branch of horizontal pecan leaning over river on right bank																
f3	RPF1	RPF1	RPF1	mia	mia	32.3	30.8		f3	RPF1	RPF1	RPF1	mia	mia	78	83
f4	30.4	30.4	30.1	RPE5	23.8	23.3	22.6		f4	83	83	83	RPE5	80	70	91
f4a	mia	25.2	25.4	dne	dne	dne	dne		f4a	mia	88	93	dne	dne	dne	dne
f4b	22.15	21.7	22.15	dne	dne	dne	dne		f4b	63	89	88	dne	dne	dne	dne
f4c	18.55	16.8	17.2	dne	dne	dne	dne		f4c	78	74	79	dne	dne	dne	dne
f4d	mia	19.2	18.25	dne	dne	dne	dne		f4d	mia	88	106	dne	dne	dne	dne
f4e	mia	mia	16.9	dne	dne	dne	dne		f4e	mia	mia	107	dne	dne	dne	dne
f5	8	8	8	nd	8.5	8.5	10.7		f5	105	95	109	135	92	67	122
	In 1992 f5a & f5b used the downstream branch of an elm tree on the left bank as a reference point															
f5a	mia	mia	7.8	nd	7.3	dne	dne		f5a	mia	mia	110	50	102	dne	dne
f5b	7.85	8.4	7.6	nd	dne	dne	dne		f5b	127	148	127	55	dne	dne	dne
f6	9.8	9.9	9.15	nd	7.9	8.4	10.7		f6	233	238	234	267	251	270	211
f6a	merged with f6			nd	dne	dne	dne		f6a	merged with f6			102	dne	dne	dne
f6b	merged with f6			nd	dne	dne	dne		f6b	merged with f6			261	dne	dne	dne
f6c	merged with f6			nd	dne	dne	dne		f6c	merged with f6			110	dne	dne	dne
f6d	merged with f6			nd	dne	dne	dne		f6d	merged with f6			85	dne	dne	dne
f6e	merged with f6			nd	dne	dne	dne		f6e	merged with f6			80	dne	dne	dne
f7	34	34.1	35.6	nd	32.3	32	34		f7	238	237	240	230	250	248	234
Reference point F-3 = low metal pole on edge of dirt bank under dead pecan on left bank																
	In 1990 & 1992 f8, f8a, & f8b used a concrete pad on the left bank as a reference point															
	In 1989 f8 reference point was not recorded															

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)					
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
h0 = g4									h0 = g4							
h0a	mia	10.7	dne	dne	dne	dne	dne		h0a	mia	111	dne	dne	dne	dne	dne
	In 1993 h1 used the 1st Chinese tallow in the river bend on left bank as a reference point															
	In1989 h1 used the water's edge on the concrete below the dam as a reference point															
h1	mia	mia	16.1	mia	16.3	16.6	29.2		h1	mia	mia	54	mia	52	55	46
Reference point H-1 = small box elder under a large box elder upstream of chinaberry on left bank																
	In 1990-1992 h2, h3, & h4 used an overhanging willow on the right bank as a reference point															
	In 1989 h2 was described as being about 200 yards downstream of a huge bald cypress															
h2	9.6	4.5	5.4	nd	5	4.8	nd		h2	285	218	198	237	199	199	nd
h3	14.4	10.4	11.17	nd	11.2	dne	dne		h3	273	234	255	236	254	dne	dne
h4	mia	16.4	16.2	nd	16.6	dne	dne		h4	mia	245	240	248	258	dne	dne
h4a	mia	mia	mia	nd	dne	dne	dne		h4a	mia	mia	mia	260	dne	dne	dne
h4b	mia	mia	mia	nd	dne	dne	dne		h4b	mia	mia	mia	260	dne	dne	dne
Segment i = east-west channel through Thompson Island to Hays County Road																
	In 1989-1991 the reference point for i1 was a large downed willow above the 4th rapid on the right bank															
i1	mia	mia	mia	mia	16	15.8	16.4		i1	mia	mia	mia	mia	196	194	192
	In 1989 & 1990 the reference point for i2 & i3 was a huge pecan by the parking area on the right bank															
i2	mia	mia	mia	mia	mia	10.7	11.3		i2	mia	mia	mia	mia	mia	82	87
i3	mia	mia	mia	mia	mia	5.7	6.6		i3	mia	mia	mia	mia	mia	60	60
Reference point I-1 = upstream trunk of a two-trunked sycamore on the left bank																
	In 1989-1993 i4, i4a, i5, i6, i6a, i6b, & i7 used the 3rd pole from the end of the bridge on the left bank as a															
		reference point														
i4	6.8	7.2	26.7	nd	26.8	27.7	26.9		i4	120	121	158	158	156	152	154
i4a	mia	mia	mia	mia	mia	27.5	dne		i4a	mia	mia	mia	mia	mia	149	dne
i5	mia	mia	mia	mia	22.9	23.1	21.9		i5	mia	mia	mia	mia	158	154	157
i6	mia	mia	19.6	mia	19.8	19.8	15.8		i6	mia	mia	158	mia	159	151	156
i6a	mia	mia	mia	mia	16.4	16.5	dne		i6a	mia	mia	mia	mia	160	161	dne
i6b	mia	mia	mia	mia	mia	12.7	dne		i6b	mia	mia	mia	mia	mia	158	dne
i7	mia	mia	mia	mia	mia	mia	11.6		i7	mia	mia	mia	mia	mia	mia	157
Segment j = Hays County Road to just below east and west channels' confluence																
Reference point J-1 = 2nd two-trunked box elder on left bank																
j1	12.9	10.7	11.5	nd	11.2	11.3	11.5		j1	9	33	32	33	30	35	40

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)					
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
j16	28.7	28.3	28.4	nd	27.9	28	8.6		j16	223	224	224	210	227	226	255
j16a	31.5	31.5	dne	dne	dne	dne	dne		j16a	227	226	dne	dne	dne	dne	dne
j16b	31.7	dne	dne	dne	dne	dne	dne		j16b	226	dne	dne	dne	dne	dne	dne
j17	33.3	33	33.1	nd	31.2	31.4	11.7		j17	222	219	220	210	229	225	247
j18	mia	34.7	35.1	nd	32.4	32.5	12.1		j18	mia	221	221	208	220	219	243
j19	mia	mia	mia	mia	mia	mia	12.8		j19	mia	mia	mia	mia	mia	mia	243
Reference point J-5 = double-trunked mulberry on left bank																
j20	3.75	4.1	3.8	nd	4.3	3.8	3.8		j20	266	292	291	300	300	303	306
j20a	5	dne	dne	dne	dne	dne	dne		j20a	286	dne	dne	dne	dne	dne	dne
j21	11.3	11.2	11.2	nd	11	11.3	10.2		j21	219	215	222	212	222	221	228
j22	13	13	12.9	nd	12.6	12.8	12.7		j22	221	220	223	225	225	223	210
	In 1989 j23 & j24 used a double-trunked pecan & an elm in front of the brick building on the left bank as															
		reference points (both were angles)														
j23	mia	mia	mia	mia	mia	16.7	84		j23	mia	mia	mia	mia	mia	209	210
j24	mia	mia	mia	mia	mia	30.2	74		j24	mia	mia	mia	mia	mia	208	206
	In 1989 j25 was measured from j24															
j25	mia	mia	mia	mia	mia	28.7	1		j25	mia	mia	mia	mia	mia	204	120
	In 1989 j26 used the same reference points as j23 and 24															
j26	33.7	33.5	33	nd	33.2	32.7	30		j26	202	201	203	210	202	205	235
Reference point K-1 = stump near the right bank just around bend (as of 1995 in midst of fallen tree)																
	In 1989 j27 used the same reference points as j23, j24, and j26															
j27	37.3	37	35.3	mia	19.8	19.8	20		j27	109	110	108	mia	108	105	265
j28	mia	mia	mia	nd	29.7	dne	dne		j28	mia	mia	mia	95	100	dne	dne
Segment x = Hays County Road to mill (east channel)																
Reference point = Hays County road bridge																
x1	mia	mia	mia	mia	mia	mia	56.9		x1	mia	mia	mia	mia	mia	mia	64
Segment k = just below east and west channels' confluence to high tension wire																
Reference point K-1 = stump near the right bank just around bend (as of 1995 in midst of fallen tree)																
	In 1989 k1, k2, & k3 used an elm in front of the brick building & the depth gage on the left bank as reference															
		points (both were angles)														
k1	24.2	23.5	23	nd	7.2	6.7	220		k1	125	112	117	114	139	125	295
k1a	16.5	15.7	16.3	dne	dne	dne	dne		k1a	136	127	131	dne	dne	dne	dne

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)						
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
k14	mia	mia	mia	nd	34.2	34.2	140		k14	mia	mia	mia	135	140	145	290
k15	17.55	17.15	17.1	nd	27.2	25.6	134		k15	338	337	338	154	150	148	292
k15a	mia	mia	19.3	dne	dne	dne	dne		k15a	mia	mia	349	dne	dne	dne	dne
k16	27.85	mia	30.2	mia	16.4	16.8	133		k16	346	mia	341	mia	148	149	271
k17	33.94	33.3	33	nd	13.5	15.3	136		k17	332	326	333	147	154	157	270
k17a	35.45	dne	dne	dne	dne	dne	dne		k17a	333	dne	dne	dne	dne	dne	dne
k17b	33.94	dne	dne	dne	dne	dne	dne		k17b	332	dne	dne	dne	dne	dne	dne
k18	33.55	33.3	32.9	mia	11.5	mia	131		k18	330	330	328	mia	170	mia	265
k20	RPK3	RPK3	RPK3	nd	RPK3	RPK3	RPK3		k20	RPK3	RPK3	RPK3	315	RPK3	RPK3	RPK3
Reference point K-3 = 1st pole in the river on the wooden fence on the left bank																
k18a	22	dne	dne	dne	dne	dne	dne		k18a	133	dne	dne	dne	dne	dne	dne
	In 1990 & 1991 k18, k20, k21, k21a, & k22 used the same reference point as k11															
	In 1989 k19, k20, k21,& k22 used the depth gage on left bank & the smaller left trunk of a pecan as															
		reference points (both were angles)														
k19	10.7	10.7	10.7	mia	mia	mia	218		k19	124	119	128	mia	mia	mia	340
k20	6.4	6.3	5.6	RPK2	21.5	22	186		k20	39	38	59	RPK2	320	312	338
k21	mia	mia	mia	mia	mia	23.7	182		k21	mia	mia	mia	mia	mia	325	340
k21a	mia	mia	mia	mia	mia	32.9	dne		k21a	mia	mia	mia	mia	mia	330	dne
k22	mia	mia	mia	mia	mia	45.4	192		k22	mia	mia	mia	mia	mia	324	336
	In 1990-1992 k23 & k24 used a large pecan downstream of a overhanging pecan on the right bank as a															
		reference point														
	In 1989 k23 & k24 used the same reference points as k19															
k23	mia	mia	mia	nd	11.7	11.5	176		k23	mia	mia	mia	308	308	306	330
k24	mia	mia	mia	mia	mia	12.3	170		k24	mia	mia	mia	mia	mia	322	30
	In 1990-1992 k25, k26, & k26a used the straight trunk of a three-trunked box elder on the right bank as a															
		reference point														
	In 1989 k25 & k26 used the smaller trunk of a pecan and a cottonwood on the left bank as reference points															
		(both were angles)														
k25	mia	mia	mia	mia	mia	4.4	138		k25	mia	mia	mia	mia	mia	260	10
k26	mia	mia	mia	nd	3.8	4.2	152		k26	mia	mia	mia	308	325	323	4
k26a	mia	mia	mia	nd	dne	dne	dne		k26a	mia	mia	mia	325	dne	dne	dne
	In 1989 k27 used a cottonwood & Paula Power's study site on the left bank as reference points (both were															
		angles)														
k27	mia	mia	mia	mia	mia	mia	220		k27	mia	mia	mia	mia	mia	mia	326

Stand		distance (m) or angle (partially used in 1989)							Stand		angle (from plant to reference point)					
	1995	1994	1993	1992	1991	1990	1989			1995	1994	1993	1992	1991	1990	1989
k37a	34.4	mia	39.1	nd	38.6	38.8	dne		k37a	79	mia	85	56	82	80	dne
k37b	36.5	dne	dne	dne	dne	dne	dne		k37b	80	dne	dne	dne	dne	dne	dne
	In 1992 k38, k39, k40, k41, k41a, k41b, k41c, k42, k43, & k47 used the closest ash to the river on the left bank															
		upstream from the powerline														
	In 1989 k38, k39, k40, k41, k42, & k43 used the 1990-1994 reference point															
k38	28	37.8	35.7	dne	35.8	35.5	44.7		k38	81	79	81	52	75	75	70
k39	mia	30.75	28.5	nd	28	28.1	35		k39	mia	80	83	48	75	78	70
k40	mia	25.15	23	nd	22.9	23.2	34.8		k40	mia	79	83	45	75	76	74
k41	11.6	20.7	18.6	nd	18.2	17.7	16.8		k41	103	90	94	45	88	88	89
k41a	12.4	7.35	6.7	nd	5.9	6.4	dne		k41a	212	159	190	287	184	181	dne
k41a1	10.1	dne	dne	dne	dne	dne	dne		k41a1	141	dne	dne	dne	dne	dne	dne
k41b	20.4	11.4	mia	nd	mia	13.5	dne		k41b	233	214	mia	268	mia	220	dne
k41c	20.9	10.9	13	nd	13.1	13.2	dne		k41c	240	239	252	283	251	248	dne
k41d	25.3	dne	dne	dne	dne	dne	dne		k41d	245	dne	dne	dne	dne	dne	dne
k41e	25.6	dne	dne	dne	dne	dne	dne		k41e	247	dne	dne	dne	dne	dne	dne
k42	28.6	20.15	22.4	nd	22.5	22.6	6.1		k42	249	254	268	287	256	254	210
k42a	30.7	dne	dne	dne	dne	dne	dne		k42a	253	dne	dne	dne	dne	dne	dne
k43	34.1	23.6	26.1	nd	26.6	29.4	14.3		k43	253	251	251	275	253	255	243
	In 1990 k44 used an overhanging sycamore on the right bank below the transmission line as a reference															
		point														
k44	39.6	29.2	31.9	nd	30.9	10.2	17.5		k44	260	259	258	280	258	72	258
	In 1989 k45 used the snag near the right bank under the transmission line & the left pole of the transmission															
		line on the right bank as reference points (both were angles)														
k45	mia	mia	mia	mia	mia	mia	79		k45	mia	mia	mia	mia	mia	mia	196
k46	apparently this number was never assigned								k46							
Reference point K-8 = upward bending branch of a multi-trunked box elder on the right bank near																
	the canoe take-out															
k47	mia	20.15	mia	mia	12.3	11.7	dne		k47	mia	267	mia	mia	230	197	dne
k48	3.5	dne	dne	dne	dne	dne	dne		k48	271	dne	dne	dne	dne	dne	dne
Segment I = high tension wire to sewage outfall																
Reference point L-0 = small American elm in front of a sycamore in the river bend on the left bank																
l0	mia	25.5	dne	dne	dne	dne	dne		l0	mia	27	dne	dne	dne	dne	dne
Reference point L-1 = American elm on flat left bank across from downed willow																

DESCRIPTIVE LOCALITY INFORMATION FOR TEXAS WILD-RICE STANDS 1989-1995

SEGMENT A - icehouse dam to University Drive

- a0 - left bank, middle channel upstream of old metal dam, downstream of Spring Lake dam
- a1 - left bank near box elder-pecan cluster
- a1a - left bank, downstream of a1
- a2 - left bank, downstream of a1a
- a3 - right bank, just upstream of bridge
- a3a - right bank, edge of elephant ears
- a3b - right bank, to the right of a3
- a3c - right bank, to the left of a3a
- a4 - missing from 1994-1995; no descriptive location was ever recorded for this stand
- a5 - missing from 1994-1995; no descriptive location was ever recorded for this stand
- a6 - midstream, between a pecan on the left bank and a willow on the right bank

SEGMENT B - University Drive to Hopkins Road railroad bridge

- b1 - left bank, just below the bridge
- b1a - missing from 1994-1995; no descriptive location was ever recorded for this stand
- b1b - left bank, just above the steps on the left bank
- b2 - right bank, from the bridge to the first steps
- b2a - right bank
- b2b - midstream, near the left upstream edge of b2
- b2c - right bank, near the edge of the first steps
- b3 - left bank-midstream, below the bridge
- b3a - left bank, left of b3 and upstream of b3d
- b3b - left bank-midstream, downstream of b3
- b3c - midstream, just to the left of b3
- b3d - left bank-midstream, just to the left of b3c
- b4 - midstream
- b5 - missing from 1994-1995; no descriptive location was ever recorded for this stand
- b5a - missing from 1994-1995; to the right of b5 by the first set of steps
- b5b - midstream, just below the first steps on the left bank
- b5c - left bank-midstream, just to the right of b5c3
- b5c1 - left bank-midstream, out from downstream edge of first steps
- b5c2 - left bank-midstream, to the right of b5c1
- b5c3 - left bank-midstream, just downstream of b5c2
- b5c4 - midstream, to the right of b5c2
- b5c5 - midstream, just downstream of b5c4
- b5c6 - midstream, just downstream of b5c5
- b5d - left bank, to the left of all other b5c stands
- b5e - left bank, to the left of b5d
- b5f - left bank, just downstream ofb5e
- b5g - left bank, downstream and to the right of bb5g2

b11g - left bank-midstream, just upstream of the third steps on the left bank
b11h - left bank, to the right of b11f
b11i - left bank, in the bend
b11j - left bank-midstream, to the right of the upstream edge of the third steps on the left bank
b11j1 - left bank-midstream, to the left of b11j
b11j2 - left bank-midstream, upstream end of the third steps on the left bank
b11k - left bank-midstream, just upstream of the downstream edge of the third steps on the left bank
b11l - left bank-midstream, just downstream of the downstream edge of the third steps on the left bank
b11m - left bank-midstream, downstream of b11l
b11m1 - left bank-midstream, downstream and to the left of b11l
b11n - left bank-midstream, about one-third of the way downstream of the third steps on the left bank
b11o - left bank, to the left of b11n
b12 - right bank, to the left of b10d
b12a - missing from 1994-1995; to the right of b12
b13 - right bank, above the third steps on the right bank
b13a - right bank, along edge, between bridge and the third steps on the right bank
b14 - left bank, along edge, below the first footbridge
b14a - midstream, between the fourth steps on the left bank and the third steps on the right bank
b14b - midstream, more or less between the downstream edges of the fourth steps on the left bank and the third steps on the right bank
b14c - left bank-midstream, about even with the third set of steps on the right bank and upstream of the fourth set of steps on the left bank
b14d - left bank-midstream, downstream edge of the fourth set of steps on the left bank
b14e - left bank-midstream, above the footbridge and across from the fourth set of steps
b14f - merged with b14e in 1995; left bank-midstream, downstream of b14e
b14g - midstream, just under the downstream edge of the footbridge
b14h - left bank-midstream, downstream edge of footbridge
b15 - left bank, along edge, between swim ladder and left bank steps
b15a - missing from 1994-1995; left bank-midstream
b15b - missing from 1994-1995; left bank-midstream, just below swim ladder on left bank
b15c - right bank-midstream, just downstream from the swim ladder on the right bank
b15d - right bank, along the edge below a redbud
b15e - missing from 1994-1995; left bank, across from steps
b15f - left bank, along edge on left bank, between steps and second footbridge
b15g - right bank, along edge, downstream of b15d

b32 - midstream, on a line between reference point B-8 (the upstream point of a concrete trough on the left bank) and a dock pier on the right bank, downstream of b31

b33 - missing in 1995; midstream, directly out from the dock pier on the right bank

b34 - midstream, out from a concrete trough on the right bank

b34a - midstream-right bank, downstream from the dock pier on the right bank

b35 - missing in 1995; midstream, on a line between reference point B-8 (the upstream point of a concrete trough on the left bank) and the dock pier on the right bank

SEGMENT C - Hopkins Road railroad bridge to Rio Vista railroad bridge

c1 - left bank, out from huge pecan on the left bank, downstream from reference point C-1 (the first Texas oak on the left bank downstream of the railroad bridge)

c2 - right bank(-midstream), out from huge pecan on the left bank, downstream from reference point C-1 (the first Texas oak on the left bank downstream of the railroad bridge)

c3 - missing from 1991-1995; no descriptive location was ever recorded for this stand

c3a - midstream, out from a concrete drainage on the left bank and a stand of cannas on the right bank

c4 - missing from 1991-1995; no descriptive location was ever recorded for this stand

c4a - midstream, near a small chinaberry and some box elders on the right bank

c5a=c5 - right bank-midstream, near some willow and pecans on the right bank

c5b - left bank, near some Chinese tallows on the left bank

c5c - missing from 1991-1995; no descriptive location was ever recorded for this stand

c5d - merged with c5a in 1995; right bank, downstream of c5a, just downstream of a chinaberry on the right bank

c5e - merged with c5a in 1995; midstream, across from some box elders on the right bank

c5f - midstream, near a large, old pecan on the right bank, downstream of c5e

c6 - across channel, downstream from an overhanging box elder

c6a - missing from 1994-1995; midstream, where the river splits

c6b - midstream, in the fork of the river

c6c - missing in 1995; right bank, just upstream of the stone wall on the left bank and across from last pecan on the left bank

c6d - left bank, at the end of the stone wall

c6e - left bank, downstream of c6d

c7 - left bank-midstream, in the bend of the river, just downstream of a bur oak on the left bank and c6

c7a - left bank, downstream of c7

c8 - left bank, upstream of a concrete wall on the left bank, upstream of a swim ladder on the left bank

e9=e9a - missing from 1991-1995; no descriptive location was ever recorded for this stand
e9b - missing from 1991-1995; no descriptive location was ever recorded for this stand
e9c - left bank, near a group of box elders and pecans on the left bank. upstream of a dead Chinese tallow on the right bank
e10 - midstream, out from a dead Chinese tallow on the right bank
e10a - midstream, just upstream of the dead Chinese tallow on the right bank
e10b - right bank, just below reference point E-4 (a small box elder downstream of the dead Chinese tallow on the right bank)
e11 - midstream, downstream of a cluster of pecans on the left bank
e11a - left bank-midstream, to the left of e11
e11b - missing from 1993-1995; no descriptive location was ever recorded for this stand
e11c - missing from 1993-1995; no descriptive location was ever recorded for this stand
e12 - left bank-midstream, under a hackberry and c chinaberry on the left bank
e13 - missing in 1995; right bank, out from baseball field on the right bank
e14 - midstream, just upstream of an American elm on the right bank

SEGMENT F - low point south side of Glover's Island to just above I-35 south access road
f1 - missing from 1990-1995; no descriptive location was ever recorded for this stand
f2 - midstream, out from a Thelypteris on the right bank, just downstream of the American elm on the right bank
f3 - right bank-midstream, downstream of a bur oak on the right bank and some pecans on the left bank
f4 - left bank-midstream, just upstream of a silty opening on the left bank,
f4a - missing in 1995; left bank, near the silty opening on the left bank
f4b - left bank-midstream, under a fallen box elder
f4c - right bank, upstream of the second leaning pecan on the right bank and across from a hackberry on the left bank
f4d - missing in 1995; midstream, out from the second leaning pecan on the right bank
f4e - missing from 1994-1995; left bank, just downstream of f4d
f5 - left bank-midstream, out from a pecan with three trunks and box elders on the left bank
f5a - missing from 1994-1995; left bank-midstream, downstream of the hackberry on the left bank
f5b - left bank, near a box elder with 3 or 4 trunks on the left bank and some pecans on the right bank

h3 - midstream, just downstream of the overhanging Chinese tallow on the right bank
h4 - missing in 1995; midstream, downstream of a hackberry on the right bank
h4a - missing from 1993-1995; no descriptive location was ever recorded for this stand
h4b - missing from 1993-1995; no descriptive location was ever recorded for this stand

SEGMENT I - east-west channel through Thompson Island to Hays County Road
i1 - missing from 1992-1995; left bank, near a huge pecan and just upstream of a fallen tree on the right bank and the fourth rapid
i2 - missing from 1991-1995; no descriptive location was ever recorded for this stand
i3 - missing from 1991-1995; no descriptive location was ever recorded for this stand
i4 - left bank-midstream, just downstream of an overhanging box elder on the left bank
i4a - missing from 1991-1995; left bank, upstream of the overhanging sycamore, just to the left of i4
i5 - missing from 1992-1995; no descriptive location was ever recorded for this stand
i6 - missing from 1994-1995; midstream, just upstream of the overhanging sycamore
i6a - missing from 1992-1995; midstream, just downstream of the overhanging sycamore
i6b - missing from 1991-1995; no descriptive location was ever recorded for this stand
i7 - missing from 1990-1995; no descriptive location was ever recorded for this stand

SEGMENT J - Hays County Road to just below east and west channels' confluence
j1 - right bank-midstream, near a downed chinaberry and bur oak
j1a - no descriptive location was ever recorded for this stand
j2 - missing from 1990-1995; no descriptive location was ever recorded for this stand
j3 - left bank, around the bend in the rive just upstream from a fence on the right bank
j4 - right bank, just around the bend in the river
j4a - no descriptive location was ever recorded for this stand
j5 - missing from 1993-1995; midstream, to the right of j6; out from a cedar elm on the left bank
j6 - left bank-midstream, upstream of the midstream rock and out from a cedar elm on the left bank
j6a - missing from 1993-1995; no descriptive location was ever recorded for this stand
j6b - no descriptive location was ever recorded for this stand
j7 - merged with j6 in 1990

x1 - missing from 1990-1995; no descriptive location was ever recorded for this stand

SEGMENT K - just below east and west channels' confluence to high tension wire

k1 - midstream, in the bend of the river
k1a - left bank-midstream, just upstream of a large box elder on the left bank
k2 - left bank-midstream, out from the large box elder on the left bank
k3 - midstream, upstream from reference point K-1 (stump in the midst of a fallen tree)
k4 - missing from 1993-1995; left bank, upstream of a log partially in the water on the left bank
k4a - left bank, left of reference point K-1 (stump in the midst of a fallen tree)
k5 - missing from 1991-1995; to the left and slightly upstream of k4 and the stump
k6 - missing from 1993-1995; left bank, downstream of the log partially in the water on the left bank
k6a - missing from 1993-1995; left bank, downstream of a stump below an anacua shrub on the left bank
k7 - midstream, out from an anacua shrub on the left bank and downstream from reference point K-1 (stump in the midst of a fallen tree)
k7a - missing from 1994-1995; left bank-midstream, downstream from reference point K-1 (stump in the midst of a fallen tree)
k8 - left bank, to the right of k9 and just upstream from a metal ladder on the left bank
k9 - left bank, just upstream of the metal ladder and the horizontal snag
k9a - missing in 1995; right bank, under a slightly overhanging box elder on the right bank
k9b - left bank-midstream, upstream of the metal ladder and the horizontal snag, just downstream of the slightly overhanging box elder on the right bank
k10 - left bank, just downstream of the metal ladder and a dead tree with a metal sign on the left bank
k10a - left bank-midstream, between the metal ladder and the concrete steps on the hill, both on the left bank
k10b - left bank-midstream, just downstream of the concrete steps on the hill and just above the dead tree with a metal sign, both on the left bank
k10c - right bank-midstream, downstream of a two-trunked box elder and below the slightly overhanging box elder, both on the right bank
k10c1 - right bank, just upstream of the two-trunked elder on the right bank
k10d - left bank-midstream, downstream and to the left of k10b
k10e - missing in 1995; midstream, upstream of a diving board on the left bank
k11 - missing from 1994-1995; left bank, just downstream of the diving board on the left bank

k27 - missing from 1990-1995; no descriptive location was ever recorded for this stand

k28 - missing from 1991-1995; left bank, downstream end of Paula Power's study site on the right bank

k28a - missing from 1991-1995; midstream

k29 - midstream-right bank, at a vine-covered pecan on the right bank, downstream of a fallen tree

k29a - missing from 1991-1995; midstream, just upstream of k29

k29b - missing in 1995; right bank-midstream, downstream of the vine-covered pecan on the right bank

k30 - midstream, downstream of k29 and at the downstream edge of the vine-covered pecan on the right bank, just upstream of bend in the river

k31 - missing from 1991-1995; right bank, beside submerged limestone ledge near the left bank and upstream of a pecan on the left bank

k32 - missing from 1993-1995; midstream, downstream of the second large pecan on the right bank

k33 - missing from 1993-1995; left bank-midstream, downstream of the second large pecan on the right bank and to the left of k32

k34 - left bank-midstream, upstream of k35 and downstream of the second pecan on the left bank across from the gravel bar in mid-channel

k35 - midstream, upstream of an overhanging box elder, downstream of k34

k35a - missing from 1994-1995; left bank-midstream, just upstream of an overhanging mulberry

k35b - missing in 1995; midstream, downstream and to the left of K35 and to the right of k35a

k36 - missing from 1990-1995; no descriptive location was ever recorded for this stand

k36a - midstream, just upstream of a ravine on the right bank

k36b - midstream, across from the ravine on the right bank

k36c - midstream, just upstream of reference point K-6 (an overhanging box elder just downstream of the bend in the river on the left bank)

k37 - midstream, just at the downstream edge of some Chinese tallows on the left bank

k37a - left bank-midstream, upstream of powerlines and near some box elders on the left bank, downstream of k37b

k37b - right bank-midstream, downstream of k37

k38 - right bank-midstream, upstream of the powerlines and near some grapes, at the downstream end of k37a

k39 - missing in 1995; right bank-midstream, upstream of the powerlines, by some hackberries and grapes, at the upstream end of a cut on the left bank

k40 - missing in 1995; right bank-midstream, out from some hackberries (one with a bent trunk) on the right bank

k41 - left bank-midstream, just upstream from powerlines, out from a group of box elders and a mulberry (?) on the left bank

APPENDIX 3

Length, width, percent cover, areal coverage, and depth for Texas wild-rice stands, 1989-1995

Stand	1995	1994	1993	1992	1991	1990	1989
b6	9.5	8.6	2.6	2.95	4.3	3.9	4.2
b6a	0.97	9.8	7.2	dne	dne	dne	dne
b6b	2.8	3.4	dne	dne	dne	dne	dne
b7	2.9	3.1	2.4	4	4.7	4.1	2.4
b7a	4.2	3.7	mia	1.2	dne	dne	dne
b7b	4.9	3.3	dne	dne	dne	dne	dne
b7c	2.9	1.55	dne	dne	dne	dne	dne
b7c1	3.1	dne	dne	dne	dne	dne	dne
b7d	1.7	1.8	dne	dne	dne	dne	dne
b7e	2.55	2.3	dne	dne	dne	dne	dne
b7f	2.75	1.6	dne	dne	dne	dne	dne
b8	16.6	16.25	15.75	17.7	11.7	3.05	4
b8a	2.6	2.5	1.8	2.7	dne	dne	dne
b8b	5.3	4.9	4	dne	dne	dne	dne
b8c	mia	mia	2.5	dne	dne	dne	dne
b8d	mia	mia	2.2	dne	dne	dne	dne
b8e	6	2.35	1.6	dne	dne	dne	dne
b8f	1.85	4.55	3.9	dne	dne	dne	dne
b9	merged	merged	merged	merged	merged	merged	1.3
b10	mia	6.8	5.55	5.7	5.1	2	4
b10a	mia	mia	mia	1.3	2.2	dne	dne
b10b	mia	mia	2	dne	dne	dne	dne
b10c	3.85	2.9	2.9	dne	dne	dne	dne
b10d	2.65	1.8	dne	dne	dne	dne	dne
b11	7.2	6.3	5	4.9	5.6	3.9	3.4
b11a	2	1.7	2	1.4	dne	dne	dne
b11b	2.1	1.1	1.6	dne	dne	dne	dne
b11c	2.1	1.8	dne	dne	dne	dne	dne
b11d	8.5	4.2	dne	dne	dne	dne	dne
b11e	1.2	4.9	dne	dne	dne	dne	dne
b11f	2.6	5	dne	dne	dne	dne	dne
b11g	2.6	1.95	dne	dne	dne	dne	dne
b11h	2.5	1.5	dne	dne	dne	dne	dne
b11i	2.5	1.3	dne	dne	dne	dne	dne
b11j	1.62	1.1	dne	dne	dne	dne	dne
b11j1	1.8	dne	dne	dne	dne	dne	dne
b11j2	2.45	dne	dne	dne	dne	dne	dne
b11k	3.1	3.2	dne	dne	dne	dne	dne
b11l	2.38	1.2	dne	dne	dne	dne	dne
b11m	2.35	1	dne	dne	dne	dne	dne
b11m1	2.2	dne	dne	dne	dne	dne	dne
b11n	4.2	1.5	dne	dne	dne	dne	dne
b11o	2.1	2.6	dne	dne	dne	dne	dne
b12	2.9	3	1.5	1.9	3.3	2.2	3.7
b12a	mia	mia	1.7	dne	dne	dne	dne
b13	4.25	3.2	3	1.8	3	2.2	2.1
b13a	3.45	2.5	2.2	dne	dne	dne	dne
b14	4.65	4.2	3.2	3.2	mia	mia	1.1

Stand	1995	1994	1993	1992	1991	1990	1989
Segment c = Hopkins Road railroad bridge to Rio Vista railroad bridge							
c1	4.3	4.1	4.1	mia	4.1	3	2.4
c2	14.77	18.5	18.1	19.3	16.3	17.2	16.5
c3	mia	mia	mia	mia	mia	2.65	4
c3a	3.22	dne	dne	dne	dne	dne	dne
c4	mia	mia	mia	mia	mia	1.9	1.2
c4a	2.85	2.4	2.1	dne	dne	dne	dne
c5a=c5	44.4	33.6	43.5	33.5	33.5	26.65	24.3
c5b	4.61	4.5	4	2.4	4.4	4.05	dne
c5c	mia	mia	mia	mia	mia	3.1	dne
c5d	merged	9.8	mia	mia	9.1	7.8	dne
c5e	merged	4.3	1.5	mia	3.1	2.4	dne
c5f	1.9	2.1	dne	dne	dne	dne	dne
c6	16.1	19.2	18.2	16.8	19.8	15.2	17.86
c6a	mia	mia	2.4	0.75	1.9	1.4	dne
c6b	1	mia	mia	mia	mia	2	dne
c6c	mia	1.7	2.3	dne	dne	dne	dne
c6d	2.3	dne	dne	dne	dne	dne	dne
c6e	3.35	dne	dne	dne	dne	dne	dne
c7	3.35	2.7	2.1	1.35	3.5	3.8	4.15
c7a	2.5	1.2	1.4	1.2	1.3	1.35	dne
c8	2	0.7	1.25	1.8	2.2	2.1	1.75
c9	15	16.05	15.9	15.1	14.8	13.8	17.7
c9a	mia	mia	mia	mia	2.9	2.44	dne
Segment d = Rio Vista railroad bridge to dam above Cheatum Street							
No Texas wild-rice was observed in this segment in either 1976 or 1989 through 1995							
Segment e = Dam above Cheatum Street to low point south side of Glover's Island							
e1	1.7	7.4	6.5	6.2	9.28	7.45	5.1
e1a	4.5	1.8	dne	dne	dne	dne	dne
e1b	1.1	dne	dne	dne	dne	dne	dne
e2	3.4	5.7	5.05	6.2	6.3	5.6	5.1
e2a	2.2	dne	dne	dne	dne	dne	dne
e2b	1.8	dne	dne	dne	dne	dne	dne
e2c	1.65	dne	dne	dne	dne	dne	dne
e2d	2.65	dne	dne	dne	dne	dne	dne
e3	2.35	3.1	4.1	1.7	5.8	5	4.2
e3a	3.6	3.2	dne	dne	dne	dne	dne
e4	mia	mia	mia	mia	mia	mia	1.3
e5	1.3	2	2	3.8	1.3	2	1.5
e6	mia	mia	mia	mia	mia	1.3	1.4
e6a	mia	mia	0.8	dne	dne	dne	dne
e6b	mia	1.8	2.2	dne	dne	dne	dne
e6c	mia	mia	3.3	dne	dne	dne	dne
e6d	5.6	4.9	4.9	dne	dne	dne	dne
e6e	dne	dne	dne	dne	dne	dne	dne
e7=e7a	2.2	2.1	3.1	3.9	2.9	1.9	2.3

Stand	1995	1994	1993	1992	1991	1990	1989
f8b	12.35	mia	mia	2.7	4.4	dne	dne
f9	4.15	2.8	3.4	3.8	4	2.26	2.8
f10	mia	mia	mia	mia	2.1	3.4	1.5
f11	10.6	9.15	10.8	19.7	9.7	9	8.1
f12	38.7	38	37.9	36.7	43.2	33.7	34.3
f13	4.75	4.8	3.3	4.1	4.6	4	dne
f14	2.05	1.65	2.31	2	2.5	1.4	dne
f15	2.2	2.7	2.95	2.1	2.6	2.5	dne
Segment g - just above South I-35 access road to Thompson Island Dam							
g1	2.65	3.7	3.2	3.3	2.3	3.45	3.7
g2	3.1	2.4	2.75	3.1	2.3	3.14	3.4
g3	2.9	3.7	4.2	2.3	3	4.37	3.55
g4	4.8	2.6	dne	dne	dne	dne	dne
Segment h = Thompson Island Dam to east-west channel through Thompson Island							
h0 = g4							
h0a	mia	0.5	dne	dne	dne	dne	dne
h1	mia	mia	0.55	mia	1.2	1.3	1.5
h2	4.9	5.3	7.7	5	14.18	11.7	8
h3	1.85	1.4	1.4	2.1	3	dne	dne
h4	mia	1.2	0.85	3.5	2.5	dne	dne
h4a	mia	mia	mia	1.4	dne	dne	dne
h4b	mia	mia	mia	2.2	dn	dne	dne
Segment i = east-west channel through Thompson Island to Hays County Road							
i1	mia	mia	mia	mia	1.3	1.42	2.8
i2	mia	mia	mia	mia	mia	1.64	3.15
i3	mia	mia	mia	mia	mia	1.22	1.65
i4	1.7	1.6	1.1	1.1	0.5	2.13	2.8
i4a	mia	mia	mia	mia	mia	1.79	dne
i5	mia	mia	mia	mia	2.15	1.95	3.5
i6	mia	mia	1.15	mia	1.45	1.5	2.65
i6a	mia	mia	mia	mia	1.05	2.32	dne
i6b	mia	mia	mia	mia	mia	1.77	dne
i7	mia	mia	mia	mia	mia	mia	1.55
Segment j = Hays County Road to just below east and west channels' confluence							
j1	4.2	9.4	9.9	8.5	8.95	9.29	3.6
j1a	1.1	dne	dne	dne	dne	dne	dne
j2	mia	mia	mia	mia	mia	mia	3.5
j3	mia	1.1	2.28	mia	3.8	2.85	3
j4	1	4.86	4.65	3.7	5.3	4.62	3.75
j4a	3.9	dne	dne	dne	dne	dne	dne
j4b	1	dne	dne	dne	dne	dne	dne
j5	mia	mia	mia	1.2	3.3	2.85	2
j6	8.2	8.5	6.8	6.6	7.4	6.56	5.1
j6a	mia	mia	mia	1.1	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
k9a	mia	1.5	dne	dne	dne	dne	dne
k9b	3.3	3.05	dne	dne	dne	dne	dne
k10	1.79	2.1	3	3.2	2.4	3.55	0.5
k10a	0.95	0.75	1.5	2.1	2.2	2.6	dne
k10b	1.3	1.05	5	dne	dne	dne	dne
k10c	2.6	0.8	dne	dne	dne	dne	dne
k10c1	1.8	dne	dne	dne	dne	dne	dne
k10d	1.4	0.75	dne	dne	dne	dne	dne
k10e	mia	2.25	dne	dne	dne	dne	dne
k11	mia	mia	2.9	2.3	2.2	3	2.7
k11a	mia	mia	mia	mia	2.7	dne	dne
k11b	1	1.1	dne	dne	dne	dne	dne
k11c	2.2	mia	mia	1.7	dne	dne	dne
k12	mia	1.8	1.5	mia	0.8	1.59	2.6
k13	mia	mia	2.4	mia	0.85	1.87	1.1
k14	mia	mia	mia	1.5	2.6	3.78	2.8
k15	7.2	5.45	7.1	6.5	6.7	5.62	5.5
k15a	mia	mia	6.3	dne	dne	dne	dne
k16	1.2	mia	1.4	mia	1.5	1.75	0.8
k17	0.9	0.95	4	6.4	6.6	6	4.1
k17a	1.7	dne	dne	dne	dne	dne	dne
k17b	0.4	dne	dne	dne	dne	dne	dne
k18	1.25	1.8	2.4	mia	1.6	mia	0.75
k18a	1.7	dne	dne	dne	dne	dne	dne
k19	1.6	2.1	1.95	mia	mia	mia	2
k20	1.85	1.55	1.45	2.3	3.5	3.2	3.3
k21	mia	mia	mia	mia	mia	2.8	1.8
k21a	mia	mia	mia	mia	mia	1.47	dne
k22	mia	mia	mia	mia	mia	2.4	1.4
k23	mia	mia	mia	2.7	2.6	4.1	0.9
k24	mia	mia	mia	mia	mia	2	2.1
k25	mia	mia	mia	mia	mia	1.8	3.4
k26	mia	mia	mia	1.6	0.8	1.31	0.75
k26a	mia	mia	mia	1.3	dne	dne	dne
k27	mia	mia	mia	mia	mia	mia	1.1
k28	mia	mia	mia	mia	mia	1.84	3.9
k28a	mia	mia	mia	mia	mia	1.88	dne
k29	1.4	1.65	2.2	2.3	1.5	3.19	1.1
k29a	mia	mia	mia	mia	mia	1.7	dne
k29b	mia	1.15	0.95	1.3	1.3	dne	dne
k30	1.4	1.4	1.6	1.6	1.7	1.24	1.1
k31	mia	mia	mia	mia	mia	2.15	1.9
k32	mia	mia	mia	1.9	3.5	1.74	1.4
k33	mia	mia	mia	1.6	1.8	2.2	0.6
k34	1.4	1.5	0.7	1.3	2.2	2.3	1.1
k35	3.1	3	1.65	2.6	2.5	1.9	0.65
k35a	mia	mia	1.2	mia	5.9	dne	dne
k35b	mia	0.45	2.5	dne	dne	dne	dne

Texas wild-rice monitoring data - stand width							
Stand	1995	1994	1993	1992	1991	1990	1989
Segment a = Icehouse dam to University Drive							
a0	0.64	0.46	dne	dne	dne	dne	dne
a1	2.53	2.6	2.4	2.43	2.3	2	dm
a1a	0.23	dne	dne	dne	dne	dne	dne
a2	0.26	0.25	3	2.2	4.9	4.9	dm
a3	2.59	3.98	5.9	3.2	3.9	3.2	dm
a3a	0.94	2.1	dne	dne	dne	dne	dne
a3b	1.5	0.6	dne	dne	dne	dne	dne
a3c	0.7	dne	dne	dne	dne	dne	dne
a4	mia	mia	0.38	mia	3	2.3	dne
a5	mia	mia	0.56	1.9	dne	dne	dne
a6	0.6	dne	dne	dne	dne	dne	dne
Segment b = University Drive to Hopkins Road railroad bridge							
b1	1.65	1.35	1	2.6	3.6	3.7	dm
b1a	mia	mia	2.5	dne	dne	dne	dne
b1b	0.73	dne	dne	dne	dne	dne	dne
b2	7.8	7.7	merged	merged	1.35	4	dm
b2a	6.22	5	merged	merged	1.45	dne	dne
b2b	0.9	dne	dne	dne	dne	dne	dne
b2c	0.3	dne	dne	dne	dne	dne	dne
b3	0.47	1	2.9	2.7	1.65	2.2	dm
b3a	1.62	1.2	1.65	1.2	1.7	1.15	dne
b3b	1.4	0.7	dne	dne	dne	dne	dne
b3c	0.29	dne	dne	dne	dne	dne	dne
b3d	0.82	dne	dne	dne	dne	dne	dne
b4	0.2	0.5	5.15	7.1	3.95	2.3	dm
b5	mia	mia	4.4	0.6	3.6	4.5	dm
b5a	mia	mia	0.7	1	2.4	0.3	dne
b5b	7.2	4.9	3.8	2.8	2.8	dne	dne
b5c	0.25	3.7	dne	dne	dne	dne	dne
b5c1	0.33	dne	dne	dne	dne	dne	dne
b5c2	0.53	dne	dne	dne	dne	dne	dne
b5c3	0.65	dne	dne	dne	dne	dne	dne
b5c4	0.25	dne	dne	dne	dne	dne	dne
b5c5	0.25	dne	dne	dne	dne	dne	dne
b5c6	0.35	dne	dne	dne	dne	dne	dne
b5d	0.34	0.4	dne	dne	dne	dne	dne
b5e	1.15	0.18	dne	dne	dne	dne	dne
b5f	0.2	2.4	dne	dne	dne	dne	dne
b5g	1	0.5	dne	dne	dne	dne	dne
b5g1	0.7	dne	dne	dne	dne	dne	dne
b5g2	0.32	dne	dne	dne	dne	dne	dne
b5g3	1.5	dne	dne	dne	dne	dne	dne
b5h	0.6	0.2	dne	dne	dne	dne	dne
b5i	0.8	0.35	dne	dne	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
b14a	1	0.4	dne	dne	dne	dne	dne
b14b	0.7	0.55	dne	dne	dne	dne	dne
b14c	0.85	0.05	dne	dne	dne	dne	dne
b14d	0.9	0.7	dne	dne	dne	dne	dne
b14e	2.7	0.7	dne	dne	dne	dne	dne
b14f	merged	0.6	dne	dne	dne	dne	dne
b14g	0.75	0.7	dne	dne	dne	dne	dne
b14h	0.95	0.7	dne	dne	dne	dne	dne
b15	1	0.4	0.4	1.45	mia	mia	dm
b15a	mia	mia	1.5	dne	dne	dne	dne
b15b	mia	mia	1.28	dne	dne	dne	dne
b15c	0.5	1.3	0.86	dne	dne	dne	dne
b15d	0.9	0.4	0.55	dne	dne	dne	dne
b15e	mia	mia	0.35	dne	dne	dne	dne
b15f	1.1	0.75	1.1	dne	dne	dne	dne
b15g	1.2	0.5	dne	dne	dne	dne	dne
b15h	1.1	1	dne	dne	dne	dne	dne
b15i	1.2	dne	dne	dne	dne	dne	dne
b15j	1.6	dne	dne	dne	dne	dne	dne
b16	0.9	0.65	0.75	mia	mia	mia	nd
b16a	0.6	mia	mia	mia	mia	mia	nd
b16b	0.6	dne	dne	dne	dne	dne	dne
b17	mia	mia	mia	1.1	1.9	1.35	dne
b18	mia	mia	mia	mia	0.4	0.4	dne
b19	mia	mia	mia	mia	1.6	1.4	dne
b19a	mia	mia	mia	mia	1.3	dne	dne
b19b	mia	mia	mia	0.35	0.7	dne	dne
b20	mia	mia	mia	mia	0.9	dne	dne
b20a	0.8	0.9	dne	dne	dne	dne	dne
b20b	0.3	dne	dne	dne	dne	dne	dne
b21	mia	mia	mia	mia	0.9	dne	dne
b22	mia	mia	mia	mia	0.9	dne	dne
b23	mia	mia	mia	mia	0.8	dne	dne
b24	apparently this number was never assigned						
b25	2.7	2.1	1.85	dne	dne	dne	dne
b25a	0.9	dne	dne	dne	dne	dne	dne
b26	0.2	0.6	0.65	dne	dne	dne	dne
b26a	0.15	dne	dne	dne	dne	dne	dne
b27	0.5	0.9	1.2	dne	dne	dne	dne
b28	1.7	1.6	1.5	dne	dne	dne	dne
b29	1	0.7	1	dne	dne	dne	dne
b30	1.3	0.8	0.95	dne	dne	dne	dne
b31	1.4	1.1	1	dne	dne	dne	dne
b32	0.8	0.71	0.65	dne	dne	dne	dne
b33	mia	0.9	0.75	dne	dne	dne	dne
b34	1.1	0.55	0.45	dne	dne	dne	dne
b34a	0.7	0.6	dne	dne	dne	dne	dne
b35	mia	0.6	dne	dne	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
e7b	0.6	0.5	mia	mia	mia	mia	0.55
e8=e8a	1.1	2.35	3.23	1.2	5.1	3	2.8
e8b	0.35	mia	mia	1.5	1.2	1.7	0.44
e8c	mia	mia	mia	1.9	1.4	dne	dne
e8d	mia	mia	0.55	dne	dne	dne	dne
e8e	0.9	0.6	0.35	dne	dne	dne	dne
e8f	0.5	0.4	dne	dne	dne	dne	dne
e8f1	0.3	dne	dne	dne	dne	dne	dne
e8f2	0.35	dne	dne	dne	dne	dne	dne
e8g	1	dne	dne	dne	dne	dne	dne
e8h	0.3	dne	dne	dne	dne	dne	dne
e8i	0.4	dne	dne	dne	dne	dne	dne
e9=e9a	mia	mia	mia	mia	mia	1.1	1.1
e9b	mia	mia	mia	mia	mia	1.1	dne
e9c	1	0.8	dne	dne	dne	dne	dne
e10	1.35	0.85	2.2	2	2.3	2.7	2.1
e10a	2	2.1	dne	dne	dne	dne	dne
e10b	0.31	0.25	dne	dne	dne	dne	dne
e11	0.85	0.65	2.75	4.6	3.7	3.5	3.6
e11a	0.9	0.95	mia	0.3	dne	dne	dne
e11b	mia	mia	mia	0.8	dne	dne	dne
e11c	mia	mia	mia	0.4	dne	dne	dne
e12	2.35	2.2	1.65	3.2	mia	1.3	1.4
e13	mia	2.1	2.6	2.6	2.4	0.8	2
e14	2.95	2	2.3	mia	2.2	1.55	1.6
Segment f = low point south side of Glover's Island to just above I-35 S access road							
f1	mia	mia	mia	mia	mia	mia	0.2
f2	1.3	1.6	1.23	1.2	1	1.5	0.8
f3	0.45	0.45	0.5	mia	mia	0.2	0.46
f4	1.2	0.6	0.75	2.3	0.98	1	0.19
f4a	mia	0.85	0.5	dne	dne	dne	dne
f4b	0.95	1.6	0.75	dne	dne	dne	dne
f4c	0.35	0.5	0.4	dne	dne	dne	dne
f4d	mia	0.05	0.2	dne	dne	dne	dne
f4e	mia	mia	0.35	dne	dne	dne	dne
f5	0.85	0.95	0.7	1.4	0.6	0.4	0.95
f5a	mia	mia	0.55	0.2	1	dne	dne
f5b	1.1	1.45	1	0.3	dne	dne	dne
f6	9.3	8.9	8.7	0.3	11.2	6.86	9
f6a	merged	merged	merged	0.4	dne	dne	dne
f6b	merged	merged	merged	0.4	dne	dne	dne
f6c	merged	merged	merged	2.5	dne	dne	dne
f6d	merged	merged	merged	0.7	dne	dne	dne
f6e	merged	merged	merged	0.3	dne	dne	dne
f7	3.6	3.1	3.2	9.5	2.37	2.65	2.63
f8	mia	5.3	9.9	6.4	5.8	2.1	5
f8a	0.7	0.6	mia	0.5	mia	4.65	dne

Stand	1995	1994	1993	1992	1991	1990	1989
j6b	0.45	dne	dne	dne	dne	dne	dne
j7	merged	merged	merged	merged	merged with j6 in 1990		2.6
j8	0.45	2.6	1.03	3.1	2.2	1.9	1.95
j9	1.3	1.8	0.4	3.1	0.9	1.4	3.5
j10	1.8	mia	mia	mia	mia	mia	3.7
j11	0.01	8.05	9.5	8.7	8.1	8.8	5.7
j11a	0.3	dne	dne	dne	dne	dne	dne
j11b	0.01	dne	dne	dne	dne	dne	dne
j11c	0.2	dne	dne	dne	dne	dne	dne
j12	mia	0.4	0.28	2.2	1.7	1.3	1.8
j13	1.15	2.8	3.1	3.4	3	3	2.7
j13a	0.47	dne	dne	dne	dne	dne	dne
j14	0.2	0.05	0.68	0.7	0.43	0.6	0.33
j15	0.15	mia	0.7	1.2	1	1.3	2
j16	0.2	0.7	1.25	1.3	0.9	0.8	0.75
j16a	0.4	0.9	dne	dne	dne	dne	dne
j16b	0.28	dne	dne	dne	dne	dne	dne
j17	0.35	0.45	0.7	2.3	1	1.5	0.76
j18	merged	1.5	1.65	0.7	1.8	1.9	2.3
j19	mia	mia	mia	mia	mia	mia	0.5
j20	0.15	2.2	2.6	2.6	2.5	2.2	2.2
j20a	1.45	dne	dne	dne	dne	dne	dne
j21	0.5	0.55	0.5	0.3	0.15	0.2	1.4
j22	0.65	0.6	0.7	0.5	0.3	0.1	1.1
j23	mia	mia	mia	mia	mia	0.18	0.45
j24	mia	mia	mia	mia	mia	0.9	0.23
j25	mia	mia	mia	mia	mia	0.5	0.6
j26	2.4	2	2.05	1.2	1.7	2.14	0.42
j27	1.55	0.95	0.7	mia	0.9	0.6	0.82
j28	mia	mia	mia	0.4	1.2	dne	dne
Segment x = Hays County Road to mill (east channel)							
x1	mia	mia	mia	mia	mia	mia	0.61
Segment k = just below east and west channels' confluence to high tension wire							
k1	2.66	2.7	3.4	2.8	3.7	2.6	2.4
k1a	3.95	3.35	2.5	dne	dne	dne	dne
k2	2.5	2.15	1.9	2.9	3.9	4.45	4.3
k3	0.9	0.45	0.45	2.7	0.3	1	0.55
k4	mia	mia	mia	3.9	2.5	1.4	1.2
k4a	1.3	1.25	mia	0.35	dne	dne	dne
k5	mia	mia	mia	mia	mia	0.5	0.5
k6	mia	mia	mia	0.8	3.2	1.67	0.75
k6a	mia	mia	mia	0.9	0.4	dne	dne
k7	1.75	1.8	1.55	2.4	0.5	0.3	0.03
k7a	mia	mia	0.4	dne	dne	dne	dne
k8	0.45	0.05	3.4	0.4	1.3	1	1.1
k9	0.4	0.55	mia	0.7	0.45	0.3	1.2

Stand	1995	1994	1993	1992	1991	1990	1989
k36	mia	mia	mia	mia	mia	mia	0.8
k36a	0.55	0.45	0.35	0.4	0.2	0.16	dne
k36b	0.6	0.5	0.25	2.3	0.2	1.17	dne
k36c	2.3	2.8	2.8	0.4	1.5	2.44	dne
k37	0.5	2.15	1.75	2.2	1.65	2.1	2.75
k37a	2.3	mia	0.2	2	1	0.45	dne
k37b	0.8	dne	dne	dne	dne	dne	dne
k38	2	2.4	2.1	1.1	2.1	2.58	2.2
k39	mia	1.7	1.6	1.4	1.9	1.4	1.9
k40	mia	1	0.9	0.8	0.7	0.41	1.5
k41	4.1	4.6	6.3	4.5	4.3	5.03	5
k41a	1.7	3.1	1.9	1.9	2	2.15	
k41a1	0.6	dne	dne	dne	dne	dne	dne
k41b	1.5	1.1	mia	1.3	mia	1	dne
k41c	0.75	3.3	2.9	2.8	2.8	2.7	dne
k41d	0.95	dne	dne	dne	dne	dne	dne
k41e	0.75	dne	dne	dne	dne	dne	dne
k42	0.7	0.5	0.75	0.6	0.9	0.57	1.25
k42a	1	dne	dne	dne	dne	dne	dne
k43	0.75	1.1	1.4	0.4	0.8	0.55	1.9
k44	0.8	0.6	0.61	0.4	1.65	1.52	1.1
k45	mia	mia	mia	mia	mia	mia	1
k46	apparently this number was never assigned						
k47	mia	0.05	mia	mia	1	0.5	dne
k48	0.25	dne	dne	dne	dne	dne	dne
Segment l = high tension wire to sewage outfall							
l0	mia	0.75	dne	dne	dne	dne	dne
l1	0.3	0.2	0.2	0.2	0.2	0.29	1.5
Segment m = sewage outfall to Blanco River confluence							
m1	mia	mia	mia	mia	mia	mia	0.25
In 1989 a1-3, b1-15, and c1-5 stands were measured with a floating one meter square							
	quadrat						
In 1989 beginning with c6, length and width were measured and percent coverage was							
	approximated within the rectangle.						
From 1990 onward all stands were measured using length, width, and percent cover							
	within the rectangle.						
dm = different methodlogy was used							
dne = stands which did not exist or were overlooked during a survey year							
mia = stands not relocated							
nd = no data was taken for this measurement on this stand							

Stand	1995	1994	1993	1992	1991	1990	1989
b6	60	40	95	30	40	100	dm
b6a	70	55	45	dne	dne	dne	dne
b6b	80	80	dne	dne	dne	dne	dne
b7	70	85	75	60	85	100	dm
b7a	70	60	mia	85	dne	dne	dne
b7b	75	85	dne	dne	dne	dne	dne
b7c	75	80	dne	dne	dne	dne	dne
b7c1	75	dne	dne	dne	dne	dne	dne
b7d	60	80	dne	dne	dne	dne	dne
b7e	60	90	dne	dne	dne	dne	dne
b7f	60	65	dne	dne	dne	dne	dne
b8	60	50	50	65	40	60	dm
b8a	70	60	70	20	dne	dne	dne
b8b	75	75	35	dne	dne	dne	dne
b8c	mia	mia	25	dne	dne	dne	dne
b8d	mia	mia	85	dne	dne	dne	dne
b8e	50	75	75	dne	dne	dne	dne
b8f	80	65	55	dne	dne	dne	dne
b9	merged	merged	merged	merged	merged	merged	dm
b10	mia	70	85	85	85	95	dm
b10a	mia	mia	mia	90	100	dne	dne
b10b	mia	mia	85	dne	dne	dne	dne
b10c	80	85	90	dne	dne	dne	dne
b10d	90	75	dne	dne	dne	dne	dne
b11	80	85	55	70	85	90	dm
b11a	60	70	60	85	dne	dne	dne
b11b	65	75	75	dne	dne	dne	dne
b11c	35	90	dne	dne	dne	dne	dne
b11d	80	60	dne	dne	dne	dne	dne
b11e	70	70	dne	dne	dne	dne	dne
b11f	65	35	dne	dne	dne	dne	dne
b11g	80	60	dne	dne	dne	dne	dne
b11h	70	50	dne	dne	dne	dne	dne
b11i	70	80	dne	dne	dne	dne	dne
b11j	85	80	dne	dne	dne	dne	dne
b11j1	90	dne	dne	dne	dne	dne	dne
b11j2	95	dne	dne	dne	dne	dne	dne
b11k	70	45	dne	dne	dne	dne	dne
b11l	90	60	dne	dne	dne	dne	dne
b11m	65	40	dne	dne	dne	dne	dne
b11m1	50	dne	dne	dne	dne	dne	dne
b11n	75	50	dne	dne	dne	dne	dne
b11o	90	55	dne	dne	dne	dne	dne
b12	mia	45	75	80	90	100	dm
b12a	mia	mia	95	dne	dne	dne	dne
b13	80	35	70	80	90	80	dm
b13a	85	80	95	dne	dne	dne	dne
b14	75	75	70	85	mia	mia	dm

Stand	1995	1994	1993	1992	1991	1990	1989
Segment c = Hopkins Road railroad bridge to Rio Vista railroad bridge							
c1	70	85	70	mia	80	75	dm
c2	60	60	50	75	45	25	dm
c3	mia	mia	mia	mia	mia	20	dm
c3a	75	dne	dne	dne	dne	dne	dne
c4	mia	mia	mia	mia	mia	100	dm
c4a	75	85	90	dne	dne	dne	dne
c5a=c5	50	45	70	65	50	85	dm
c5b	75	75	10	70	95	80	dne
c5c	mia	mia	mia	mia	mia	70	dne
c5d	merged	70	mia	mia	70	100	dne
c5e	merged	80	90	mia	65	95	dne
c5f	35	85	dne	dne	dne	dne	dne
c6	75	55	70	80	40	80	100
c6a	mia	mia	80	65	70	60	dne
c6b	60	mia	mia	mia	mia	100	dne
c6c	mia	40	90	dne	dne	dne	dne
c6d	90	dne	dne	dne	dne	dne	dne
c6e	75	dne	dne	dne	dne	dne	dne
c7	80	75	80	70	90	100	100
c7a	90	80	90	95	80	100	dne
c8	75	40	70	85	50	50	100
c9	65	50	55	60	75	85	100
c9a	mia	mia	mia	mia	75	75	dne
Segment d = Rio Vista railroad bridge to dam above Cheatum Street							
No Texas wild-rice was observed in this segment in either 1976 or 1989 through 1995							
Segment e = Dam above Cheatum Street to low point south side of Glover's Island							
e1	80	50	35	35	90	65	80
e1a	85	75	dne	dne	dne	dne	dne
e1b	75	dne	dne	dne	dne	dne	dne
e2	75	35	20	60	30	40	50
e2a	75	dne	dne	dne	dne	dne	dne
e2b	70	dne	dne	dne	dne	dne	dne
e2c	50	dne	dne	dne	dne	dne	dne
e2d	85	dne	dne	dne	dne	dne	dne
e3	65	70	85	80	50	25	50
e3a	75	60	dne	dne	dne	dne	dne
e4	mia	mia	mia	mia	mia	mia	80
e5	70	80	85	85	60	50	50
e6	mia	mia	mia	mia	mia	85	50
e6a	mia	mia	90	dne	dne	dne	dne
e6b	mia	80	95	dne	dne	dne	dne
e6c	mia	mia	80	dne	dne	dne	dne
e6d	50	50	60	dne	dne	dne	dne
e6e	dne	dne	dne	dne	dne	dne	dne
e7=e7a	55	70	70	50	70	60	100

Stand	1995	1994	1993	1992	1991	1990	1989
f8b	25	mia	mia	30	60	dne	dne
f9	80	80	60	30	80	90	80
f10	mia	mia	mia	mia	45	85	75
f11	80	75	80	60	90	90	90
f12	35	40	70	50	40	40	50
f13	80	70	55	80	40	70	dne
f14	75	60	90	60	90	35	dne
f15	70	50	60	65	100	30	dne
Segment g - just above South I-35 access road to Thompson Island Dam							
g1	65	40	80	90	60	30	85
g2	75	80	85	85	80	85	90
g3	55	85	85	50	85	85	85
g4	65	40	dne	dne	dne	dne	dne
Segment h = Thompson Island Dam to east-west channel through Thompson Island							
h0 = g4							
h0a	mia	95	dne	dne	dne	dne	dne
h1	mia	mia	85	mia	80	30	100
h2	65	70	5	70	30	55	75
h3	40	15	65	80	90	dne	dne
h4	mia	60	90	30	20	dne	dne
h4a	mia	mia	mia	85	dne	dne	dne
h4b	mia	mia	mia	85	dne	dne	dne
Segment i = east-west channel through Thompson Island to Hays County Road							
i1	mia	mia	mia	mia	90	100	100
i2	mia	mia	mia	mia	mia	100	100
i3	mia	mia	mia	mia	mia	55	100
i4	25	35	70	95	50	65	80
i4a	mia	mia	mia	mia	mia	75	dne
i5	mia	mia	mia	mia	65	90	100
i6	mia	mia	60	mia	75	65	100
i6a	mia	mia	mia	mia	75	70	dne
i6b	mia	mia	mia	mia	mia	30	dne
i7	mia	mia	mia	mia	mia	mia	5
Segment j = Hays County Road to just below east and west channels' confluence							
j1	55	30	55	20	30	50	50
j1a	60	dne	dne	dne	dne	dne	dne
j2	mia	mia	mia	mia	mia	mia	65
j3	mia	100	65	mia	95	75	100
j4	80	80	65	60	50	75	95
j4a	50	dne	dne	dne	dne	dne	dne
j4b	75	dne	dne	dne	dne	dne	dne
j5	mia	mia	mia	75	90	75	100
j6	50	50	55	75	70	50	100
j6a	mia	mia	mia	85	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
k9b	45	60	dne	dne	dne	dne	dne
k10	70	80	60	15	70	80	100
k10a	90	35	35	80	65	85	dne
k10b	90	35	40	dne	dne	dne	dne
k10c	70	30	dne	dne	dne	dne	dne
k10c1	90	dne	dne	dne	dne	dne	dne
k10d	60	65	dne	dne	dne	dne	dne
k10e	mia	65	dne	dne	dne	dne	dne
k11	mia	mia	30	50	50	40	80
k11a	mia	mia	mia	mia	80	dne	dne
k11b	65	20	dne	dne	dne	dne	dne
k11c	75	mia	mia	35	dne	dne	dne
k12	mia	45	85	mia	100	60	40
k13	mia	mia	20	mia	50	70	100
k14	mia	mia	mia	50	40	50	100
k15	35	25	20	35	35	50	10
k15a	mia	mia	20	dne	dne	dne	dne
k16	75	mia	80	mia	80	75	100
k17	100	45	20	40	45	55	50
k17a	90	dne	dne	dne	dne	dne	dne
k17b	80	dne	dne	dne	dne	dne	dne
k18	85	70	75	mia	80	mia	90
k18a	70	dne	dne	dne	dne	dne	dne
k19	80	75	95	mia	mia	mia	75
k20	90	25	40	75	70	35	85
k21	mia	mia	mia	mia	mia	90	50
k21a	mia	mia	mia	mia	mia	75	dne
k22	mia	mia	mia	mia	mia	30	95
k23	mia	mia	mia	70	90	80	100
k24	mia	mia	mia	mia	mia	100	25
k25	mia	mia	mia	mia	mia	90	100
k26	mia	mia	mia	85	90	95	50
k26a	mia	mia	mia	70	dne	dne	dne
k27	mia	mia	mia	mia	mia	mia	90
k28	mia	mia	mia	mia	mia	100	15
k28a	mia	mia	mia	mia	mia	35	dne
k29	75	70	90	85	80	20	100
k29a	mia	mia	mia	mia	mia	10	dne
k29b	mia	70	95	90	80	dne	dne
k30	70	80	75	85	60	40	100
k31	mia	mia	mia	mia	mia	80	60
k32	mia	mia	mia	80	90	70	15
k33	mia	mia	mia	75	80	80	100
k34	75	80	70	80	85	80	100
k35	80	55	35	70	85	55	100
k35a	mia	mia	80	mia	50	dne	dne
k35b	mia	15	55	dne	dne	dne	dne
k36	mia	mia	mia	mia	mia	mia	95
k36a	80	80	95	80	90	80	dne

Texas wild-rice monitoring data - stand areal coverage							
Stand	1995	1994	1993	1992	1991	1990	1989
Segment a = icehouse dam to University Drive							
a0	0.52	0.44	dne	dne	dne	dne	dne
a1	20.31	22.76	18.72	19.48	18.98	19.6	7.8
a1a	0.09	dne	dne	dne	dne	dne	dne
a2	0.2	0.24	6.64	3.7	34.1	32.63	6.62
a3	9.87	8.76	12.39	9.12	22.23	18.24	8.68
a3a	0.8	0.95	dne	dne	dne	dne	dne
a3b	2.18	2.16	dne	dne	dne	dne	dne
a3c	1.12	dne	dne	dne	dne	dne	dne
a4	mia	mia	0.29	mia	8.09	6.99	dne
a5	mia	mia	0.63	1.94	dne	dne	dne
a6	0.84	dne	dne	dne	dne	dne	dne
Segment b = University Drive to Hopkins Road railroad bridge							
b1	5.69	4.35	1.26	22.88	26.35	29.69	17
b1a	mia	mia	13.16	dne	dne	dne	dne
b1b	1.19	dne	dne	dne	dne	dne	dne
b2	75.89	97.67	merged	merged	5.87	27.9	15.02
b2a	43.22	3.96	merged	merged	7.25	dne	dne
b2b	1.55	dne	dne	dne	dne	dne	dne
b2c	0.2	dne	dne	dne	dne	dne	dne
b3	0.2	1.53	15.02	14.47	6.35	9.15	4.1
b3a	1.98	3.82	8.27	1.2	7.08	2.48	dne
b3b	3.12	1.29	dne	dne	dne	dne	dne
b3c	0.1	dne	dne	dne	dne	dne	dne
b3d	1.2	dne	dne	dne	dne	dne	dne
b4	0.06	0.76	35.15	28.68	32.29	17.57	6.46
b5	mia	mia	33.46	1.3	30.46	28.35	10.58
b5a	mia	mia	1.98	1.91	5.52	0.33	dne
b5b	56.97	31.85	15.05	22.37	16.63	dne	dne
b5c	0.13	17.32	dne	dne	dne	dne	dne
b5c1	0.18	dne	dne	dne	dne	dne	dne
b5c2	0.5	dne	dne	dne	dne	dne	dne
b5c3	0.45	dne	dne	dne	dne	dne	dne
b5c4	0.09	dne	dne	dne	dne	dne	dne
b5c5	0.03	dne	dne	dne	dne	dne	dne
b5c6	0.16	dne	dne	dne	dne	dne	dne
b5d	0.16	0.47	dne	dne	dne	dne	dne
b5e	1.59	0.19	dne	dne	dne	dne	dne
b5f	0.08	10.61	dne	dne	dne	dne	dne
b5g	3.01	0.84	dne	dne	dne	dne	dne
b5g1	0.4	dne	dne	dne	dne	dne	dne
b5g2	0.14	dne	dne	dne	dne	dne	dne
b5g3	4.2	dne	dne	dne	dne	dne	dne
b5h	0.96	0.25	dne	dne	dne	dne	dne
b5i	1.79	0.8	dne	dne	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
b14a	1.84	0.22	dne	dne	dne	dne	dne
b14b	1.08	0.35	dne	dne	dne	dne	dne
b14c	1.19	0.06	dne	dne	dne	dne	dne
b14d	0.86	0.89	dne	dne	dne	dne	dne
b14e	7.9	0.67	dne	dne	dne	dne	dne
b14f	merged	0.46	dne	dne	dne	dne	dne
b14g	1.31	1.18	dne	dne	dne	dne	dne
b14h	2.33	1.26	dne	dne	dne	dne	dne
b15	1.2	0.7	0.68	3.39	mia	mia	0.75
b15a	mia	mia	1.24	dne	dne	dne	dne
b15b	mia	mia	2.74	dne	dne	dne	dne
b15c	0.39	1.77	1.38	dne	dne	dne	dne
b15d	0.97	0.45	0.73	dne	dne	dne	dne
b15e	mia	mia	0.31	dne	dne	dne	dne
b15f	2.64	1.18	2.2	dne	dne	dne	dne
b15g	2.44	0.5	dne	dne	dne	dne	dne
b15h	1.86	1.52	dne	dne	dne	dne	dne
b15i	2.88	dne	dne	dne	dne	dne	dne
b15j	4.6	dne	dne	dne	dne	dne	dne
b16	3.44	1.44	1.72	mia	mia	mia	nd
b16a	1.06	mia	mia	mia	mia	mia	nd
b16b	1.46	dne	dne	dne	dne	dne	dne
b17	mia	mia	mia	2.48	5.32	3.14	dne
b18	mia	mia	mia	mia	0.55	0.45	dne
b19	mia	mia	mia	mia	8.35	5.67	dne
b19a	mia	mia	mia	mia	1.87	dne	dne
b19b	mia	mia	mia	0.21	0.88	dne	dne
b20	mia	mia	mia	mia	2.03	dne	dne
b20a	1.66	1.44	dne	dne	dne	dne	dne
b20b	0.19	dne	dne	dne	dne	dne	dne
b21	mia	mia	mia	mia	1.76	dne	dne
b22	mia	mia	mia	mia	1.38	dne	dne
b23	mia	mia	mia	mia	1.43	dne	dne
b24	apparently this number was never assigned						
b25	16.81	11.18	9.25	dne	dne	dne	dne
b25a	1.96	dne	dne	dne	dne	dne	dne
b26	0.3	1.13	1.11	dne	dne	dne	dne
b26a	0.07	dne	dne	dne	dne	dne	dne
b27	0.72	1.17	2.57	dne	dne	dne	dne
b28	4.59	3.43	3.28	dne	dne	dne	dne
b29	2.55	1.23	1.89	dne	dne	dne	dne
b30	4.06	4.9	1.52	dne	dne	dne	dne
b31	5.25	3.47	2.55	dne	dne	dne	dne
b32	2.34	1.19	0.59	dne	dne	dne	dne
b33	mia	1.89	1.21	dne	dne	dne	dne
b34	1.72	0.03	0.86	dne	dne	dne	dne
b34a	1.18	0.47	dne	dne	dne	dne	dne
b35	mia	0.5	dne	dne	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
e7b	0.61	0.59	mia	mia	mia	mia	0.69
e8=e8a	2.38	6.35	8.27	3.67	12.65	7.66	6.38
e8b	0.5	mia	mia	4.48	3.02	2.62	0.66
e8c	mia	mia	mia	0.93	3	dne	dne
e8d	mia	mia	0.84	dne	dne	dne	dne
e8e	1.52	0.65	0.57	dne	dne	dne	dne
e8f	0.92	0.19	dne	dne	dne	dne	dne
e8f1	0.24	dne	dne	dne	dne	dne	dne
e8f2	0.69	dne	dne	dne	dne	dne	dne
e8g	1.33	dne	dne	dne	dne	dne	dne
e8h	0.16	dne	dne	dne	dne	dne	dne
e8i	0.2	dne	dne	dne	dne	dne	dne
e9=e9a	mia	mia	mia	mia	mia	1.87	2.15
e9b	mia	mia	mia	mia	mia	0.88	dne
e9c	1.28	1.34	dne	dne	dne	dne	dne
e10	1.82	1.3	5.28	3.25	4.14	2.43	3.36
e10a	5.78	2.66	dne	dne	dne	dne	dne
e10b	0.244	0.09	dne	dne	dne	dne	dne
e11	1.81	0.78	7.86	12.7	17.17	12.5	18.3
e11a	1.46	1.5	mia	0.41	dne	dne	dne
e11b	mia	mia	mia	1.63	dne	dne	dne
e11c	mia	mia	mia	0.42	dne	dne	dne
e12	4.11	3.08	3.43	5.28	mia	2.73	4.2
e13	mia	1.32	2.76	7.96	1.92	2.56	2.56
e14	14.44	11.6	14.14	mia	13.2	7.38	10.88
Segment f = low point south side of Glover's Island to just above I-35 S access road							
f1	mia	mia	mia	mia	mia	mia	0.1
f2	3.54	2.98	2.58	2.69	2.66	2.29	1.6
f3	0.32	0.68	1.06	mia	mia	0.26	1.18
f4	1.76	0.99	1.6	14.32	2.89	2.4	0.71
f4a	mia	0.65	0.52	dne	dne	dne	dne
f4b	2.13	2.56	0.94	dne	dne	dne	dne
f4c	0.47	0.53	0.38	dne	dne	dne	dne
f4d	mia	0.06	0.16	dne	dne	dne	dne
f4e	mia	mia	0.17	dne	dne	dne	dne
f5	1.85	1.73	0.55	3.57	0.91	0.23	2.04
f5a	mia	mia	0.36	0.13	0.84	dne	dne
f5b	2.43	2.28	1.5	0.29	dne	dne	dne
f6	77.19	34.71	67.16	0.6	43.96	22.09	59.7
f6a	merged	merged	merged	1.71	dne	dne	dne
f6b	merged	merged	merged	0.78	dne	dne	dne
f6c	merged	merged	merged	7.5	dne	dne	dne
f6d	merged	merged	merged	1.52	dne	dne	dne
f6e	merged	merged	merged	0.41	dne	dne	dne
f7	15.68	8.43	2.82	66.69	4.38	6.36	6.73
f8	mia	20.59	46.33	27.55	28.77	2.9	28.58
f8a	0.46	0.63	mia	0.55	mia	12.37	dne

Stand	1995	1994	1993	1992	1991	1990	1989
j6b	0.43	dne	dne	dne	dne	dne	dne
j7	merged	merged	merged	merged	merged with j6 in 1990		4.37
j8	0.5	0.7	0.82	0.71	1.67	2	2.34
j9	0.57	0.54	0.15	2.42	1.08	0.94	2.26
j10	2.38	mia	mia	mia	mia	mia	8.73
j11	0.01	16.1	30.09	45.68	43.25	28.78	16.42
j11a	0.57	dne	dne	dne	dne	dne	dne
j11b	0.01	dne	dne	dne	dne	dne	dne
j11c	0.04	dne	dne	dne	dne	dne	dne
j12	mia	0.24	0.31	5.68	1.12	1.88	2.54
j13	2.3	5.39	6.82	11.27	7.8	15.08	9.11
j13a	0.47	dne	dne	dne	dne	dne	dne
j14	0.1	0.01	1.35	1.51	0.74	0.9	0.33
j15	0.07	mia	0.56	2.86	1.19	3.64	0.35
j16	0.43	0.86	2.19	2.92	0.65	1.8	1.5
j16a	0.9	0.24	dne	dne	dne	dne	dne
j16b	0.24	dne	dne	dne	dne	dne	dne
j17	0.67	0.03	0.83	1.28	1.53	2.16	1.52
j18	merged	0.12	0.62	0.96	1.72	3.42	1.43
j19	mia	mia	mia	mia	mia	mia	0.62
j20	0.17	2.97	4.21	1.76	4.35	6.86	3.73
j20a	2.48	dne	dne	dne	dne	dne	dne
j21	1.2	0.4	1.08	0.32	0.34	0.11	1.65
j22	1.29	0.83	2.08	1.08	0.65	0.02	1.16
j23	mia	mia	mia	mia	mia	0.28	1.42
j24	mia	mia	mia	mia	mia	1.27	0.49
j25	mia	mia	mia	mia	mia	0.57	0.23
j26	5.46	3.5	3.32	3.37	4.97	5.7	0.63
j27	3.26	0.68	1.7	mia	2.19	0.86	1.01
j28	mia	mia	mia	0.58	2.81	dne	dne
Segment x = Hays County Road to mill (east channel)							
x1	mia	mia	mia	mia	mia	mia	1.04
Segment k = just below east and west channels' confluence to high tension wire							
k1	7.18	4.12	8.92	3.53	9.16	6.67	4.97
k1a	13.69	6.41	6.28	dne	dne	dne	dne
k2	9.43	4.18	7.6	11.16	21.53	25.63	10.75
k3	0.88	0.35	0.69	5.86	0.43	1.28	0.66
k4	mia	mia	mia	15.68	2.33	2.44	2.05
k4a	2.93	1.71	mia	0.34	dne	dne	dne
k5	mia	mia	mia	mia	mia	0.7	0.55
k6	mia	mia	mia	1.18	9.28	5.85	1.43
k6a	mia	mia	mia	2.14	0.65	dne	dne
k7	3	5.26	1.92	1.22	0.72	1.13	0.01
k7a	mia	mia	0.29	dne	dne	dne	dne
k8	0.65	0.01	4.76	0.45	3.61	3.49	1.06
k9	0.29	0.03	mia	1.34	0.65	0.31	0.05

Stand	1995	1994	1993	1992	1991	1990	1989
k36	mia	mia	mia	mia	mia	mia	1.37
k36a	0.84	0.79	0.53	0.61	0.25	0.21	dne
k36b	1.08	0.65	0.51	2.07	0.13	0.8	dne
k36c	2.12	2.74	3.39	0.65	2.1	1.45	dne
k37	0.24	8.87	7.96	5.62	6.14	7.56	1.07
k37a	4.42	mia	0.19	2.8	2.16	0.61	dne
k37b	0.83	dne	dne	dne	dne	dne	dne
k38	3.8	3.31	4.01	1.78	6.47	7.6	2.6
k39	mia	1.99	3.31	0.63	3.25	0.71	3.18
k40	mia	2.03	1.26	1.6	0.95	0.41	1.69
k41	22.8	39.92	34.81	16.74	34.83	50.51	19.25
k41a	7.75	8.84	5.32	4.94	6.72	8.78	dne
k41a1	1.39	dne	dne	dne	dne	dne	dne
k41b	2.81	2.11	mia	1.56	mia	2.33	dne
k41c	7.33	11.06	12.01	8.68	5.71	10.08	dne
k41d	1.45	dne	dne	dne	dne	dne	dne
k41e	1.39	dne	dne	dne	dne	dne	dne
k42	1.27	0.52	1.2	1.08	2.3	0.94	1.69
k42a	1.84	dne	dne	dne	dne	dne	dne
k43	1.95	0.96	3.51	0.48	2.18	0.68	3.59
k44	2.05	0.83	0.99	0.45	4.49	3.3	0.44
k45	mia	mia	mia	mia	mia	mia	0.54
k46	apparently this number was never assigned						
k47	mia	0.01	mia	mia	1.24	0.77	dne
k48	0.34	dne	dne	dne	dne	dne	dne
Segment l = high tension wire to sewage outfall							
l0	mia	1.32	dne	dne	dne	dne	dne
l1	0.52	0.2	0.52	0.33	0.29	0.43	2.84
Segment m = sewage outfall to Blanco River confluence							
m1	mia	mia	mia	mia	mia	mia	0.53
In 1989 a1-3, b1-15, and c1-5 stands were measured with a floating one meter square							
	quadrat						
In 1989 beginning with c6, length and width were measured and percent coverage was							
	approximated within the rectangle.						
From 1990 onward all stands were measured using length, width, and percent cover							
	within the rectangle.						
dm = different methodlogy was used							
dne = stands which did not exist or were overlooked during a survey year							
mia = stands not relocated							
nd = no data was taken for this measurement on this stand							

Stand	1995	1994	1993	1992	1991	1990	1989
b6	1.38	1.24	1.34	0.85	1.12	1.1	nd
b6a	0.51	0.24	1.34	dne	dne	dne	dne
b6b	1.35	1.1	dne	dne	dne	dne	dne
b7	1.32	1.1	2.02	1.6	1.15	1.2	nd
b7a	1.5	1.2	mia	1.49	dne	dne	dne
b7b	0.9	0.64	dne	dne	dne	dne	dne
b7c	0.8	0.5	dne	dne	dne	dne	dne
b7c1	0.65	dne	dne	dne	dne	dne	dne
b7d	1.05	0.55	dne	dne	dne	dne	dne
b7e	0.83	0.61	dne	dne	dne	dne	dne
b7f	0.77	0.65	dne	dne	dne	dne	dne
b8	1.15	0.95	1.13	1.16	1.5	0.9	nd
b8a	0.6	0.4	0.73	1.2	dne	dne	dne
b8b	0.95	0.85	1	dne	dne	dne	dne
b8c	mia	mia	1.5	dne	dne	dne	dne
b8d	mia	mia	0.75	dne	dne	dne	dne
b8e	0.85	0.5	0.82	dne	dne	dne	dne
b8f	0.9	0.55	0.82	dne	dne	dne	dne
b9	merged	merged	merged	merged	merged	merged	nd
b10	mia	0.65	0.92	1.45	1	0.9	nd
b10a	mia	mia	mia	1.5	1.16	dne	dne
b10b	mia	mia	0.85	dne	dne	dne	dne
b10c	1.4	1.1	1.29	dne	dne	dne	dne
b10d	1.05	1.1	dne	dne	dne	dne	dne
b11	1.1	0.8	0.91	1.3	1.15	1	nd
b11a	1.72	1.2	1.45	1.6	dne	dne	dne
b11b	1.3	1.2	1.21	dne	dne	dne	dne
b11c	1.23	1.18	dne	dne	dne	dne	dne
b11d	1.2	0.95	dne	dne	dne	dne	dne
b11e	ca. 1.2	1.08	dne	dne	dne	dne	dne
b11f	1	1.08	dne	dne	dne	dne	dne
b11g	1.38	0.98	dne	dne	dne	dne	dne
b11h	1.5	1.12	dne	dne	dne	dne	dne
b11i	1.25	1.2	dne	dne	dne	dne	dne
b11j	1.25	1.22	dne	dne	dne	dne	dne
b11j1	1.55	dne	dne	dne	dne	dne	dne
b11j2	1.16	dne	dne	dne	dne	dne	dne
b11k	1.3	1.26	dne	dne	dne	dne	dne
b11l	1.6	1.18	dne	dne	dne	dne	dne
b11m	1.3	1.2	dne	dne	dne	dne	dne
b11m1	1.25	dne	dne	dne	dne	dne	dne
b11n	1.4	1.16	dne	dne	dne	dne	dne
b11o	1.5	1.08	dne	dne	dne	dne	dne
b12	mia	1.08	1.3	1.7	0.85	0.7	nd
b12a	mia	mia	1.18	dne	dne	dne	dne
b13	1.2	1.05	1.28	1.6	1.2	0.9	nd
b13a	0.96	0.83	1.2	dne	dne	dne	dne
b14	1.02	0.8	1.05	1.35	mia	mia	nd

Stand	1995	1994	1993	1992	1991	1990	1989
Segment c = Hopkins Road railroad bridge to Rio Vista railroad bridge							
c1	0.9	0.85	0.9	mia	1	0.75	nd
c2	1.13	1	1.1	1.3	1.2	0.9	nd
c3	mia	mia	mia	mia	mia	0.79	nd
c3a	1.6	dne	dne	dne	dne	dne	dne
c4	mia	mia	mia	mia	mia	1.4	nd
c4a	1.65	1.7	1.5	dne	dne	dne	dne
c5a=c5	0.65	0.6	0.7	0.95	0.9	0.7	nd
c5b	0.65	0.6	0.6	0.6	0.6	0.45	dne
c5c	mia	mia	mia	mia	mia	1.3	dne
c5d	merged	1.05	mia	mia	1.15	0.9	dne
c5e	merged	1.2	ca. 2	mia	1.3	1.18	dne
c5f	1.7	1.7	dne	dne	dne	dne	dne
c6	0.4	0.33	0.4	0.64	0.5	0.5	nd
c6a	mia	mia	0.5	ca. 2	0.6	0.36	dne
c6b	0.55	mia	mia	mia	mia	0.3	dne
c6c	mia	0.3	0.35	dne	dne	dne	dne
c6d	0.5	dne	dne	dne	dne	dne	dne
c6e	0.85	dne	dne	dne	dne	dne	dne
c7	0.63	0.5	0.4	0.6	0.62	0.43	nd
c7a	0.55	0.45	0.6	0.6	0.6	0.4	dne
c8	0.6	0.5	0.5	0.6	0.6	0.5	nd
c9	0.7	0.7	0.7	0.8	0.6	0.7	nd
c9a	mia	mia	mia	mia	0.7	0.5	dne
Segment d = Rio Vista railroad bridge to dam above Cheatum Street							
No Texas wild-rice was observed in this segment in either 1976 or 1989 through 1995							
Segment e = Dam above Cheatum Street to low point south side of Glover's Island							
e1	0.9	0.8	0.95	1.2	0.75	0.5	nd
e1a	0.85	1	dne	dne	dne	dne	dne
e1b	1.05	dne	dne	dne	dne	dne	dne
e2	0.8	0.8	0.95	1.2	0.9	0.75	nd
e2a	0.85	dne	dne	dne	dne	dne	dne
e2b	0.9	dne	dne	dne	dne	dne	dne
e2c	1	dne	dne	dne	dne	dne	dne
e2d	1.1	dne	dne	dne	dne	dne	dne
e3	1.05	0.9	1.26	1.3	1.11	0.95	nd
e3a	1.1	0.95	dne	dne	dne	dne	dne
e4	mia	mia	mia	mia	mia	mia	nd
e5	1.25	1.15	1.7	1.5	1.25	1.05	nd
e6	mia	mia	mia	mia	mia	0.8	nd
e6a	mia	mia	0.75	dne	dne	dne	dne
e6b	mia	0.5	0.65	dne	dne	dne	dne
e6c	mia	mia	0.7	dne	dne	dne	dne
e6d	0.6	0.45	0.7	dne	dne	dne	dne
e6e	dne	dne	dne	dne	dne	dne	dne
e7=e7a	0.7	0.4	0.7	0.9	0.55	0.4	nd

Stand	1995	1994	1993	1992	1991	1990	1989
f8b	2	mia	mia	0.9	1.4	dne	dne
f9	0.95	0.95	1.2	1.4	1.2	1.15	0.8
f10	mia	mia	mia	mia	1.3	0.85	1.13
f11	1.1	0.95	1.15	1.3	1.25	1.1	1.1
f12	1.05	1.1	1.1	0.9	0.6	1.1	1
f13	1.35	1.3	1.3	1.5	1.3	1.4	dne
f14	1.3	1.2	1.46	1.7	1.3	0.9	dne
f15	1.45	1.25	1.31	1.7	1.2	1	dne
Segment g - just above South I-35 access road to Thompson Island Dam							
g1	1.95	1.65	1.75	1.3	1.6	1.6	1.6
g2	1.4	1.2	1.33	1.5	1.2	1.5	0.75
g3	1.2	1	1.2	1.9	1.5	0.9	1.02
g4	2.1	1.6	dne	dne	dne	dne	dne
Segment h = Thompson Island Dam to east-west channel through Thompson Island							
h0 = g4							
h0a	mia	0.15	dne	dne	dne	dne	dne
h1	mia	mia	0.85	mia	0.95	0.71	0.6
h2	0.7	0.5	0.7	0.7	0.65	0.35	0.42
h3	0.6	0.4	0.32	0.7	0.45	dne	dne
h4	mia	0.35	0.42	0.65	0.35	dne	dne
h4a	mia	mia	mia	0.5	dne	dne	dne
h4b	mia	mia	mia	0.45	dne	dne	dne
Segment i = east-west channel through Thompson Island to Hays County Road							
i1	mia	mia	mia	mia	0.4	0.32	0.3
i2	mia	mia	mia	mia	mia	0.23	0.3
i3	mia	mia	mia	mia	mia	0.2	0.33
i4	0.4	0.3	0.4	0.5	0.4	0.26	0.27
i4a	mia	mia	mia	mia	mia	0.3	dne
i5	mia	mia	mia	mia	0.55	0.55	0.7
i6	mia	mia	0.88	mia	1	0.88	1.08
i6a	mia	mia	mia	mia	1.2	0.99	dne
i6b	mia	mia	mia	mia	mia	1.09	dne
i7	mia	mia	mia	mia	mia	mia	0.89
Segment j = Hays County Road to just below east and west channels' confluence							
j1	0.7	0.35	0.38	0.65	0.6	0.45	0.5
j1a	0.8	dne	dne	dne	dne	dne	dne
j2	mia	mia	mia	mia	mia	mia	0.66
j3	mia	0.49	0.76	mia	0.8	0.6	0.6
j4	0.95	0.8	0.8	0.9	1	1.2	0.9
j4a	1.05	dne	dne	dne	dne	dne	dne
j4b	0.32	dne	dne	dne	dne	dne	dne
j5	mia	mia	mia	0.8	0.7	0.5	0.43
j6	0.34	0.4	0.45	0.6	0.6	0.4	0.38
j6a	mia	mia	mia	0.55	dne	dne	dne

Stand	1995	1994	1993	1992	1991	1990	1989
k9a	mia	0.3	dne	dne	dne	dne	dne
k9b	0.8	0.6	dne	dne	dne	dne	dne
k10	0.6	0.4	0.55	0.8	1.2	1	0.4
k10a	0.6	0.45	0.55	1.3	1	0.9	dne
k10b	0.82	0.55	0.7	dne	dne	dne	dne
k10c	0.9	0.7	dne	dne	dne	dne	dne
k10c1	0.55	dne	dne	dne	dne	dne	dne
k10d	0.98	0.7	dne	dne	dne	dne	dne
k10e	mia	0.75	dne	dne	dne	dne	dne
k11	mia	mia	1.35	1.3	1.1	0.94	0.54
k11a	mia	mia	mia	mia	1.1	dne	dne
k11b	1.25	0.7	dne	dne	dne	dne	dne
k11c	1.2	mia	mia	0.9	dne	dne	dne
k12	mia	1.05	1.6	mia	1.3	1.2	0.9
k13	mia	mia	1.2	mia	1.4	1.2	0.88
k14	mia	mia	mia	1.4	1.3	1.24	1
k15	0.8	0.65	0.85	1	0.9	0.78	0.6
k15a	mia	mia	0.85	dne	dne	dne	dne
k16	0.8	mia	0.9	mia	0.8	0.65	0.62
k17	0.8	0.7	0.9	1	0.9	0.74	0.55
k17a	0.85	dne	dne	dne	dne	dne	dne
k17b	0.8	dne	dne	dne	dne	dne	dne
k18	1.15	0.7	0.9	mia	0.9	mia	0.81
k18a	1.1	dne	dne	dne	dne	dne	dne
k19	1.15	0.8	1.05	mia	mia	mia	0.85
k20	1.1	0.95	1.05	0.9	1	1	0.65
k21	mia	mia	mia	mia	mia	1	0.95
k21a	mia	mia	mia	mia	mia	0.7	dne
k22	mia	mia	mia	mia	mia	0.65	0.63
k23	mia	mia	mia	1.2	0.96	0.7	0.75
k24	mia	mia	mia	mia	mia	0.82	0.61
k25	mia	mia	mia	mia	mia	0.5	0.7
k26	mia	mia	mia	1	0.9	0.63	0.6
k26a	mia	mia	mia	1	dne	dne	dne
k27	mia	mia	mia	mia	mia	mia	0.55
k28	mia	mia	mia	mia	mia	0.65	0.75
k28a	mia	mia	mia	mia	mia	0.6	dne
k29	1.1	0.8	0.95	1.1	0.8	0.9	0.95
k29a	mia	mia	mia	mia	mia	0.8	dne
k29b	mia	0.5	0.75	0.9	0.7	dne	dne
k30	1.5	1.3	1.45	1.8	1.3	1.15	0.7
k31	mia	mia	mia	mia	mia	1.6	1.05
k32	mia	mia	mia	1	0.7	0.65	0.65
k33	mia	mia	mia	0.85	0.9	0.59	0.55
k34	0.7	0.5	0.58	1.25	0.9	0.73	0.6
k35	0.4	0.25	0.4	1.3	0.85	0.8	0.65
k35a	mia	mia	1.05	mia	1.14	dne	dne
k35b	mia	0.75	1.05	dne	dne	dne	dne