	TOTAL	2.3	.0	43.2	27.3	15.9	.0	11.4	107.3	113.4	44	100.0	8579.6

TRANSECT 14

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
ARTRT	ARTEMISIA TRIDENTATA	.0	.0	80.0	20.0	.0	.0	.0	47.0	14.8	10	32.3	2040.8
ACGR	ACER GRANDIDENTATUM	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	6	19.4	1224.5
JUOS	JUNIPERUS OSTEOSPERMA	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	3.2	204.1
PSMEM	PSEUDOTSUGA MENZIESII	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	3.2	204.1
QUGA	QUERCUS GAMBELII	.0	.0	7.7	38.5	.0	.0	53.8	247.6	172.4	13	41.9	2653.1
	TOTAL	.0	.0	29.0	22.6	3.2	3.2	41.9	211.2	170.6	31	100.0	6326.5

TRANSECT 15

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
ARTRT	ARTEMISIA TRIDENTATA	.0	.0	28.6	42.9	28.6	.0	.0	86.4	46.2	7	17.1	1428.6
QUGA	QUERCUS GAMBELII	.0	.0	5.9	.0	58.8	.0	35.3	232.1	129.2	34	82.9	6938.8
	TOTAL	.0	.0	9.8	7.3	53.7	.0	29.3	207.2	131.0	41	100.0	8367.3

SUMMARY - ALL TRANSECTS

CODE	SCIENTIFIC NAME	NO OF TRANSECTS	PERCENT FREQUENCY - HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY (#/HA) MEAN	STD.DEV.
AMUTU	AMELANCHIER UTAHENSIS	15	.0	.0	.0	.0	50.0	50.0	.0	225.0	86.6	4	.7	54.4	93.4
ARTRT	ARTEMISIA TRIDENTATA	15	1.6	5.4	62.5	25.9	4.5	.0	.0	52.3	27.5	112	18.9	1523.9	641.0
ATCA	ATRIPLEX CANESCENS	15	.0	.0	50.0	50.0	.0	.0	.0	57.5	24.7	2	.3	27.2	71.6
RIBES	RIBES SP.	15	.0	.0	20.0	60.0	20.0	.0	.0	83.0	40.4	5	.8	68.0	126.0
SYOC	SYMPHORICARPOS OCCIDENTALIS	15	.0	26.2	53.9	12.8	5.1	.0	.0	44.5	29.9	39	5.6	530.6	591.5
ACGR	ACER GRANDIDENTATUM	15	.0	.0	.0	3.7	66.7	.0	29.6	221.6	119.5	27	4.6	367.3	1126.9
JUOS	JUNIPERUS OSTEOSPERMA	15	.0	.0	.0	50.0	.0	50.0	.0	187.5	159.1	2	.3	27.2	71.6
PSMEM	PSEUDOTSUGA MENZIESII	15	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	.2	13.6	52.7
QUGA	QUERCUS GAMBELII	15	.0	.0	4.2	13.5	23.2	17.2	41.7	269.9	134.5	400	67.6	5442.2	2536.9
	TOTAL	15	.3	2.4	18.6	15.[illegible]	20.6	12.2	29.6	205.9	145.2	592	100.0	[illegible]	2212.7

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**** EVALUATION OF SAMPLING ADEQUACY ****
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DESIRED CONFIDENCE LEVEL = 80.0 PERCENT

SAMPLE SIZE =  15

MEAN SHRUB DENSITY (NO./HA) =    8054.4
SAMPLE STANDARD DEVIATION =     2212.7
MINIMUM SAMPLE SIZE TO PROVIDE DESIRED CONFIDENCE LEVEL =    3
Z STATISTIC = 1.99
CONFIDENCE LEVEL OBTAINED = 97.7 PERCENT

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SHRUB HEIGHT AND DENSITY ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL PINYON-JUNIPER
REFERENCE SITE
OCTOBER 1981

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HEIGHT CLASSES

CODE	RANGE (CM)	MID-POINT (CM)
A	0-10	5
B	11-30	20
C	31-50	40
D	51-100	75
E	101-200	150
F	201-400	300
G	OVER 400	-

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TRANSECT 1

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	6	60.0	1224.5
QUGA	QUERCUS GAMBELII	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	4	40.0	816.3
	TOTAL	.0	.0	40.0	.0	.0	.0	60.0	256.6	186.4	10	100.0	2040.8

TRANSECT 2

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	71.4	.0	.0	28.6	168.1	152.8	14	100.0	2857.1
	TOTAL	.0	.0	.0	71.4	.0	.0	28.6	168.1	152.8	14	100.0	2857.1

TRANSECT 3

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	3	100.0	1632.7
	TOTAL	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	3	100.0	1632.7

TRANSECT 4

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
QUGA	QUERCUS GAMBELII	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	9	100.0	1836.7
	TOTAL	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	9	100.0	1836.7

TRANSECT 5

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	8.3	204.1
PIED	PINUS EDULIS	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	11	91.7	2244.9
	TOTAL	.0	8.3	.0	91.7	.0	.0	.0	70.4	15.9	12	100.0	2449.0

TRANSECT 6

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	60.0	20.0	20.0	230.2	108.9	10	100.0	2040.8
	TOTAL	.0	.0	.0	.0	60.0	20.0	20.0	230.2	108.9	10	100.0	2040.8

TRANSECT 7

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA

CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	63.6	.0	.0	36.4	.0	134.5	131.2	11	100.0	2244.9
	TOTAL	.0	.0	63.6	.0	.0	36.4	.0	134.5	131.2	11	100.0	2244.9

TRANSECT 8

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
QUGA	QUERCUS GAMBELII	.0	.0	.0	38.2	29.4	.0	32.4	202.5	142.7	34	100.0	6938.8
	TOTAL	.0	.0	.0	36.2	29.4	.0	32.4	202.5	142.7	34	100.0	6938.8

TRANSECT 9

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	.0	85.7	14.3	.0	.0	.0	45.0	13.2	7	58.3	1428.6
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	8.3	204.1
CELEL	CERCOCARPUS LEDIFOLIUS	.0	25.0	.0	.0	.0	.0	75.0	305.8	190.5	4	33.3	816.3
	TOTAL	.0	16.7	50.0	8.3	.0	.0	25.0	129.8	164.1	12	100.0	2449.0

TRANSECT 10

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	6	66.7	1224.5
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	3	33.3	612.2
	TOTAL	.0	66.7	.0	.0	.0	.0	33.3	147.0	190.5	9	100.0	1836.7

TRANSECT 11

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA

CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	11	91.7	2244.9
CELEL	CERCOCARPUS LEDIFOLIUS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	8.3	204.1
	TOTAL	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	12	100.0	2449.0

TRANSECT 12

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	4	30.8	816.3
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	55.6	44.4	.0	216.7	79.1	9	69.2	1836.7
	TOTAL	.0	.0	.0	.0	38.5	30.8	30.8	273.4	109.6	13	100.0	2653.1

TRANSECT 13

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	38.5	38.5	.0	.0	.0	23.1	115.6	163.0	13	100.0	2653.1
	TOTAL	.0	38.5	38.5	.0	.0	.0	23.1	115.6	163.0	13	100.0	2653.1

TRANSECT 14

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	66.7	.0	.0	.0	20.0	13.3	126.8	159.1	15	100.0	3061.2
	TOTAL	.0	66.7	.0	.0	.0	20.0	13.3	126.8	159.1	15	100.0	3061.2

TRANSECT 15

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA

CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	3	23.1	612.2
QUGA	QUERCUS GAMBELII	.0	.0	10.0	30.0	60.0	.0	.0	116.5	44.4	10	76.9	2040.3
	TOTAL	.0	.0	7.7	23.1	46.2	.0	23.1	182.2	130.6	13	100.0	2653.1

SUMMARY - ALL TRANSECTS

CODE	SCIENTIFIC NAME	NO OF TRANSECTS	PERCENT FREQUENCY - HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY (#/HA) MEAN	STD.DEV.
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	15	.0	.0	85.7	14.3	.0	.0	.0	45.0	13.2	7	3.6	95.2	368.9
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	15	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	18	9.2	244.9	637.0
CELEL	CERCOCARPUS LEDIFOLIUS	15	.0	21.7	14.5	12.0	.0	8.4	43.4	218.4	176.1	83	42.6	1129.3	1095.9
PIED	PINUS EDULIS	15	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	11	5.6	149.7	579.6
QUGA	QUERCUS GAMBELII	15	.0	.0	18.4	21.1	35.5	7.9	17.1	168.7	125.8	76	39.0	1034.0	1848.8
	TOTAL	15	.0	18.5	16.4	19.5	13.8	6.7	25.1	166.4	152.9	195	100.0	2653.1	1253.3

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**** EVALUATION OF SAMPLING ADEQUACY ****

DESIRED CONFIDENCE LEVEL = 80.0 PERCENT

SAMPLE SIZE = 15

MEAN SHRUB DENSITY (NO./HA) = 2653.1
SAMPLE STANDARD DEVIATION = 1253.3
MINIMUM SAMPLE SIZE TO PROVIDE DESIRED CONFIDENCE LEVEL = 8
Z STATISTIC = 1.16
CONFIDENCE LEVEL OBTAINED = 87.7 PERCENT

****

SHRUB HEIGHT AND DENSITY ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

CASTLE GATE RIPARIAN
REFERENCE SITE
JULY 1981

****

HEIGHT CLASSES

CODE	RANGE (CM)	MID-POINT (CM)
A	0-10	5
B	11-30	20
C	31-50	40
D	51-100	75
E	101-200	150
F	201-400	300
G	OVER 400	-

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TRANSECT 2

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	33.3	204.1
VIBUR	VIBURNUM SP.	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	2	66.7	408.2
	TOTAL	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	3	100.0	612.2

TRANSECT 3

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	16.7	204.1
ROSA	ROSA SP.	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	1	16.7	204.1
ACGR	ACER GRANDIDENTATUM	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	3	50.0	612.2
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	16.7	204.1
	TOTAL	.0	.0	16.7	50.0	16.7	16.7	.0	119.2	95.7	6	100.0	1224.5

TRANSECT 4

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
RHTRT	RHUS TRILOBATA	.0	.0	.0	50.0	.0	50.0	.0	197.5	159.1	2	22.2	409.2
ROSA	ROSA SP.	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	11.1	204.1
SALIX	SALIX SP.	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	11.1	204.1
QUGA	QUERCUS GAMBELII	.0	.0	.0	60.0	.0	.0	40.0	205.4	178.6	5	55.6	1020.4
	TOTAL	.0	11.1	.0	44.4	11.1	11.1	22.2	174.7	151.0	9	100.0	1836.7

TRANSECT 5

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	100.0	204.1
	TOTAL	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	100.0	204.1

TRANSECT 6

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
ROSA	ROSA SP.	18.2	81.8	.0	.0	.0	.0	.0	17.3	6.1	11	100.0	2244.9
	TOTAL	18.2	81.8	.0	.0	.0	.0	.0	17.3	6.1	11	100.0	2244.9

TRANSECT 7

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
ROSA	ROSA SP.	15.8	84.2	.0	.0	.0	.0	.0	17.6	5.6	19	67.9	3877.6
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	77.8	22.2	322.4	44.5	9	32.1	1836.7
	TOTAL	10.7	57.1	.0	.0	.0	25.0	7.1	115.6	147.1	28	100.0	5714.3

TRANSECT 9

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
ROSA	ROSA SP.	.0	16.7	50.0	33.3	.0	.0	.0	48.3	22.1	6	100.0	1224.5
	TOTAL	.0	16.7	50.0	33.3	.0	.0	.0	48.3	22.1	6	100.0	1224.5

TRANSECT 10

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
RHTRT	RHUS TRILOBATA	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	5	35.7	1020.4
RICEC	RIBES CEREUM	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	7.1	204.1
ACGR	ACER GRANDIDENTATUM	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	7.1	204.1
QUGA	QUERCUS GAMBELII	.0	.0	.0	57.1	42.9	.0	.0	107.1	40.1	7	50.0	1428.6
	TOTAL	.0	.0	.0	28.6	28.6	42.9	.0	192.9	100.7	14	100.0	2857.1

TRANSECT 11

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
ROSA	ROSA SP.	.0	18.2	45.5	36.4	.0	.0	.0	49.1	21.9	11	91.7	2244.9
SALIX	SALIX SP.	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	8.3	204.1
	TOTAL	.0	16.7	41.7	33.3	.0	8.3	.0	70.0	75.4	12	100.0	2449.0

TRANSECT 12

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	11.1	11.1	11.1	66.7	.0	.0	115.0	54.3	9	28.1	1836.7
RHTRT	RHUS TRILOBATA	.0	.0	.0	.0	71.4	28.6	.0	192.9	73.2	7	21.9	1428.6
ROSA	ROSA SP.	.0	.0	36.4	45.5	18.2	.0	.0	75.9	40.2	11	34.4	2244.9
SALIX	SALIX SP.	.0	.0	.0	.0	66.7	33.3	.0	200.0	36.6	3	9.4	612.2
QUGA	QUE[illegible] GAMBELII	.0	.0	.0	.0	[illegible].0	50.0	.0	225.0	106.1	2	6.3	408.2

	TOTAL	.0	3.1	15.6	18.8	50.0	12.5	.0	133.4	78.8	32	100.0	6530.6

TRANSECT 13

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
RHTRT	RHUS TRILOBATA	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	50.0	204.1
ACGLG	ACER GLABRUM	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	50.0	204.1
	TOTAL	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	2	100.0	408.2

TRANSECT 14

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	.0	50.0	50.0	.0	.0	.0	57.5	19.2	6	26.1	1224.5
ROSA	ROSA SP.	8.3	8.3	50.0	25.0	8.3	.0	.0	53.3	37.3	12	52.2	2449.0
SALIX	SALIX SP.	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	4	17.4	816.3
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	4.3	204.1
	TOTAL	4.3	4.3	39.1	26.1	4.3	21.7	.0	108.0	107.2	23	100.0	4693.9

TRANSECT 15

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	.0	.0	33.3	66.7	.0	.0	125.0	43.3	3	16.7	612.2
ROSA	ROSA SP.	.0	.0	25.0	50.0	25.0	.0	.0	85.0	46.4	4	22.2	816.3
SALIX	SALIX SP.	.0	.0	.0	.0	33.3	66.7	.0	250.0	75.0	9	50.0	1836.7
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	2	11.1	408.2
	TOTAL	.0	.0	5.6	16.7	33.3	44.4	.0	198.1	99.2	18	100.0	3673.5

TRANSECT 16

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA

ROSA	ROSA SP.	12.5	25.0	62.5	.0	.0	.0	.0	30.6	13.7	8	100.0	1632.7
	TOTAL	12.5	25.0	62.5	.0	.0	.0	.0	30.6	13.7	8	100.0	1632.7

TRANSECT 17

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
SALIX	SALIX SP.	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	100.0	204.1
	TOTAL	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	100.0	204.1

TRANSECT 18

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
ROSA	ROSA SP.	.0	33.3	66.7	.0	.0	.0	.0	33.3	11.5	3	100.0	612.2
	TOTAL	.0	33.3	66.7	.0	.0	.0	.0	33.3	11.5	3	100.0	612.2

TRANSECT 19

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	8.3	204.1
COSTS	CORNUS STOLONIFERA	.0	.0	40.0	40.0	.0	20.0	.0	106.0	109.9	5	41.7	1020.4
ROSA	ROSA SP.	25.0	.0	75.0	.0	.0	.0	.0	31.3	17.5	4	33.3	816.3
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	50.0	50.0	.0	.0	.0	.0	30.0	14.1	2	16.7	408.2
	TOTAL	8.3	8.3	50.0	16.7	.0	16.7	.0	84.6	102.4	12	100.0	2449.0

TRANSECT 20

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA

ROSA	ROSA SP.	.0	50.0	50.0	.0	.0	.0	.0	30.0	11.0	6	85.7	1224.5
ACGR	ACER GRANDIDENTATUM	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	1	14.3	204.1
	TOTAL	.0	42.9	57.1	.0	.0	.0	.0	31.4	10.7	7	100.0	1428.6

TRANSECT 21

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
RHTRT	RHUS TRILOBATA	.0	.0	.0	60.0	40.0	.0	.0	105.0	41.1	5	15.2	1020.4
ROSA	ROSA SP.	.0	25.0	62.5	12.5	.0	.0	.0	39.4	16.2	24	72.7	4898.0
SALIX	SALIX SP.	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	3	9.1	612.2
QUGA	QUERCUS GAMBELII	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	3.0	204.1
	TOTAL	.0	18.2	45.5	21.2	6.1	9.1	.0	74.1	79.0	33	100.0	6734.7

TRANSECT 22

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	3	10.3	612.2
RHTRT	RHUS TRILOBATA	40.0	.0	20.0	.0	.0	40.0	.0	130.0	155.8	5	17.2	1020.4
ROSA	ROSA SP.	.0	21.4	35.7	21.4	21.4	.0	.0	66.8	48.9	14	48.3	2857.1
SALIX	SALIX SP.	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	3	10.3	612.2
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	4	13.8	816.3
	TOTAL	6.9	10.3	20.7	10.3	20.7	31.0	.0	142.6	117.0	29	100.0	5913.4

TRANSECT 23

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	20.0	80.0	.0	.0	135.0	33.5	5	62.5	1020.4
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	12.5	204.1
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	12.5	204.1
ROSA	ROSA SP.	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	12.5	204.1
	TOTAL	.0	.0	.0	37.5	50.0	12.5	.0	140.6	74.3	8	100.0	1632.7

TRANSECT 24

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	2	6.7	408.2
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	.0	50.0	50.0	.0	.0	.0	.0	30.0	14.1	2	6.7	408.2
RHTRT	RHUS TRILOBATA	.0	.0	11.1	33.3	44.4	11.1	.0	129.4	77.2	9	30.0	1836.7
ROSA	ROSA SP.	.0	.0	28.6	71.4	.0	.0	.0	65.0	17.1	7	23.3	1428.6
QUGA	QUERCUS GAMBELII	.0	.0	.0	30.0	70.0	.0	.0	127.5	36.2	10	33.3	2040.8
	TOTAL	.0	3.3	13.3	36.7	36.7	10.0	.0	118.5	75.4	30	100.0	6122.4

TRANSECT 25

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	.0	33.3	66.7	.0	.0	.0	.0	33.3	11.5	3	18.8	612.2
RHTRT	RHUS TRILOBATA	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	2	12.5	408.2
QUGA	QUERCUS GAMBELII	18.2	9.1	18.2	27.3	.0	27.3	.0	112.3	123.2	11	68.8	2244.9
	TOTAL	12.5	12.5	25.0	31.3	.0	18.8	.0	92.8	105.7	16	100.0	3265.3

TRANSECT 26

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
RHTRT	RHUS TRILOBATA	.0	.0	.0	50.0	50.0	.0	.0	112.5	43.3	4	23.5	816.3
ROSA	ROSA SP.	.0	.0	42.9	42.9	14.3	.0	.0	70.7	39.1	7	41.2	1428.6
SALIX	SALIX SP.	.0	.0	.0	.0	50.0	50.0	.0	225.0	86.6	4	23.5	816.3
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	2	11.8	408.2
	TOTAL	.0	.0	17.6	29.4	29.4	23.5	.0	143.8	98.0	17	100.0	3469.4

TRANSECT 27

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	7.1	20[illegible]
RHTRT	RHUS TRILOBATA	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	7.1	204.1
											2	14.3	408.2

SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	7.1	204.1
ACGR	ACER GRANDIDENTATUM	.0	.0	.0	66.7	.0	33.3	.0	150.0	129.9	3	21.4	612.2
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	6	42.9	1224.5
	TOTAL	.0	7.1	.0	28.6	.0	64.3	.0	215.7	118.1	14	100.0	2857.1

TRANSECT 28

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
ROSA	ROSA SP.	52.2	17.4	30.4	.0	.0	.0	.0	18.3	15.7	23	67.6	4693.9
QUGA	QUERCUS GAMBELII	.0	.0	63.6	.0	18.2	18.2	.0	107.3	104.7	11	32.4	2244.9
	TOTAL	35.3	11.8	41.2	.0	5.9	5.9	.0	47.1	72.6	34	100.0	6938.8

SUMMARY - ALL TRANSECTS

			PERCENT FREQUENCY - HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY (#/HA)	
CODE	SCIENTIFIC NAME	NO OF TRANSECTS	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	MEAN	STD.DEV.
AMUTU	AMELANCHIER UTAHENSIS	28	.0	.0	.0	9.1	45.5	45.5	.0	211.4	87.6	11	2.9	80.2	210.3
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	28	.0	8.7	17.4	21.7	47.8	4.3	.0	109.8	65.9	23	6.1	167.6	426.8
CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	28	.0	33.3	50.0	16.7	.0	.0	.0	39.2	20.1	6	1.6	43.7	140.0
COSTS	CORNUS STOLONIFERA	28	.0	.0	40.0	40.0	.0	20.0	.0	106.0	109.9	5	1.3	36.4	192.8
RHTRT	RHUS TRILOBATA	28	4.9	.0	4.9	26.8	31.7	31.7	.0	165.0	101.4	41	10.9	298.8	513.5
RICEC	RIBES CEREUM	28	.0	.0	.0	66.7	33.3	.0	.0	100.0	43.3	3	.8	21.9	85.0
ROSA	ROSA SP.	28	11.6	28.3	37.6	17.9	4.6	.0	.0	41.6	32.2	173	45.9	1260.9	1459.0
SALIX	SALIX SP.	28	.0	.0	.0	.0	31.0	69.0	.0	253.4	70.6	29	7.7	211.4	417.4
SYOC	SYMPHORICARPOS OCCIDENTALIS	28	.0	66.7	33.3	.0	.0	.0	.0	26.7	11.5	3	.8	21.9	85.0
VIBUR	VIBURNUM SP.	28	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	2	.5	14.6	77.1
ACGLG	ACER GLABRUM	28	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	.3	7.3	38.6
ACGR	ACER GRANDIDENTATUM	28	.0	.0	12.5	62.5	.0	25.0	.0	126.9	107.5	8	2.1	58.3	165.3
QUGA	QUERCUS GAMBELII	28	2.8	1.4	12.5	19.4	13.1	40.3	5.6	190.2	120.7	72	19.1	524.8	764.5
	TOTAL	28	6.4	14.9	23.1	19.1	15.9	19.6	1.1	113.9	107.4	377	100.0	2747.8	2246.3

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**** EVALUATION OF SAMPLING ADEQUACY ****

DESIRED CONFIDENCE LEVEL = 80.0 PERCENT

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SAMPLE SIZE =  28

MEAN SHRUB DENSITY (NO./HA) =   2747.8
SAMPLE STANDARD DEVIATION =    2246.3
MINIMUM SAMPLE SIZE TO PROVIDE DESIRED CONFIDENCE LEVEL =  24
Z STATISTIC =  .92
CONFIDENCE LEVEL OBTAINED = 82.1 PERCENT

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SHRUB HEIGHT AND DENSITY ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL RIPARIAN
REFERENCE SITE
JULY 1981

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HEIGHT CLASSES

CODE	RANGE (CM)	MID-POINT (CM)
A	0-10	5
B	11-30	20
C	31-50	40
D	51-100	75
E	101-200	150
F	201-400	300
G	OVER 400	-

****

SUMMARY - TOTAL COUNT

		PERCENT FREQUENCY - HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	DENSITY (#/HA)
AMUTU	AMELANCHIER UTAHENSIS	.0	83.3	16.7	.0	.0	.0	.0	23.3	8.2	6	1.8	7.4
ARTRT	ARTEMISIA TRIDENTATA	.0	50.0	50.0	.0	.0	.0	.0	30.0	14.1	2	.6	2.5
BERE	BERBERIS REPENS	83.3	16.7	.0	.0	.0	.0	.0	7.5	5.8	18	5.5	22.2
CHNAN	CHRYSOTHAMNUS NAUSEOSUS	.0	83.3	16.7	.0	.0	.0	.0	23.3	7.7	18	5.5	22.2
COSTS	CORNUS STOLONIFERA	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	.3	1.2
HODUS	HOLODISCUS DUMOSUS	.0	.0	7.7	46.2	46.2	.0	.0	106.9	41.7	26	7.9	32.1
JUCOS	JUNIPERUS COMMUNIS	.0	50.0	.0	50.0	.0	.0	.0	47.5	38.9	2	.6	2.5
RICEC	RIBES CEREUM	.0	9.7	25.8	41.9	22.6	.0	.0	77.6	44.0	31	9.5	38.3
ROSA	ROSA SP.	.0	29.6	40.7	25.9	3.7	.0	.0	47.2	29.4	27	8.2	33.3
RUIDS	RUBUS IDAEUS	.0	.0	75.0	25.0	.0	.0	.0	48.8	17.5	4	1.2	4.9
SYOC	SYMPHORICARPOS OCCIDENTALIS	8.4	31.5	37.1	21.0	2.1	.0	.0	40.4	27.3	143	43.6	176.6
BEOCO	BETULA OCCIDENTALIS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	.3	1.2
CELEL	CERCOCARPUS LEDIFOLIUS	.0	33.3	25.0	33.3	8.3	.0	.0	54.2	38.4	12	3.7	14.8
QUGA	QUERCUS GAMBELII	.0	51.4	5.4	.0	5.4	32.4	5.4	139.5	143.1	37	11.3	45.7
	TOTAL	8.2	31.7	26.5	20.7	8.2	4.0	.0	59.6	67.7	328	100.0	404.9

SHRUB HEIGHT AND DENSITY ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL CONIFER
REFERENCE SITE
JULY 1981

****

HEIGHT CLASSES

CODE	RANGE (CM)	MID-POINT (CM)
A	0-10	5
B	11-30	20
C	31-50	40
D	51-100	75
E	101-200	150
F	201-400	300
G	OVER 400	-

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TRANSECT 1

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
BERE	BERBERIS REPENS	73.8	26.2	.0	.0	.0	.0	.0	8.9	6.7	42	49.4	8571.4
ROSA	ROSA SP.	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	1	1.2	204.1
RUIDS	RUBUS IDAEUS	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	1	1.2	204.1
SYOC	SYMPHORICARPOS OCCIDENTALIS	25.0	56.3	12.5	6.3	.0	.0	.0	22.2	17.6	16	19.8	3265.3
QUGA	QUERCUS GAMBELII	12.0	48.0	40.0	.0	.0	.0	.0	26.2	12.4	25	29.4	5102.0
	TOTAL	44.7	37.6	16.5	1.2	.0	.0	.0	17.2	14.0	85	100.0	17346.9

TRANSECT 2

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
BERE	BERBERIS REPENS	89.9	11.1	.0	.0	.0	.0	.0	6.7	4.8	54	78.3	11020.4
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	83.3	16.7	.0	.0	.0	.0	23.3	8.2	6	8.7	1224.5
QUGA	QUERCUS GAMBELII	.0	22.2	44.4	33.3	.0	.0	.0	47.2	22.4	9	13.0	1836.7
	TOTAL	69.6	18.8	7.2	4[illegible]	.0	.0	.0	13.4	16.7	69	100.0	140[illegible].6

TRANSECT 3

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	81.8	18.2	.0	.0	.0	.0	.0	7.7	6.1	11	25.0	2244.9
SYOC	SYMPHORICARPOS OCCIDENTALIS	35.5	32.3	25.8	6.5	.0	.0	.0	23.4	19.5	31	70.5	6326.5
QUGA	QUERCUS GAMBELII	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	2	4.5	408.2
	TOTAL	45.5	31.8	18.2	4.5	.0	.0	.0	19.3	17.9	44	100.0	8979.6

TRANSECT 4

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	4	9.5	916.3
SYOC	SYMPHORICARPOS OCCIDENTALIS	13.2	23.7	55.3	7.9	.0	.0	.0	33.4	17.8	38	90.5	7755.1
	TOTAL	21.4	21.4	50.0	7.1	.0	.0	.0	30.7	18.9	42	100.0	8571.4

TRANSECT 5

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	94.9	5.1	.0	.0	.0	.0	.0	5.8	3.3	79	74.5	16122.4
RHTRT	RHUS TRILOBATA	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	.9	204.1
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	36.8	36.8	26.3	.0	.0	.0	41.8	22.2	19	17.9	3877.6
QUGA	QUERCUS GAMBELII	.0	85.7	14.3	.0	.0	.0	.0	22.9	7.6	7	6.6	1428.6
	TOTAL	70.8	17.0	7.5	4.7	.0	.0	.0	13.5	17.1	106	100.0	21632.7

TRANSECT 6

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	95.8	4.2	.0	[illegible]	.0	.0	.0	5.6	3.1	24	35.8	4[illegible]0
		.0	75.0	18.8	6.3	.0	.0	.0	27.2	15.1	16	23.9	3[illegible]3

QUGA	QUERCUS GAMBELII	.0	55.6	44.4	.0	.0	.0	.0	28.9	10.1	27	40.3	5510.2
	TOTAL	34.3	41.8	22.4	1.5	.0	.0	.0	20.1	14.7	67	100.0	13673.5

TRANSECT 7

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	15	27.8	3061.2
RUIDS	RUBUS IDAEUS	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	2	3.7	408.2
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	53.6	42.9	3.6	.0	.0	.0	30.5	13.2	28	51.9	5714.3
QUGA	QUERCUS GAMBELII	.0	77.8	22.2	.0	.0	.0	.0	24.4	8.8	9	16.7	1836.7
	TOTAL	27.8	40.7	29.6	1.9	.0	.0	.0	22.8	15.3	54	100.0	11020.4

TRANSECT 8

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	85.4	14.6	.0	.0	.0	.0	.0	7.2	5.4	48	66.7	9795.9
SYOC	SYMPHORICARPOS OCCIDENTALIS	12.5	50.0	29.2	8.3	.0	.0	.0	28.5	18.4	24	33.3	4898.0
	TOTAL	61.1	26.4	9.7	2.8	.0	.0	.0	14.3	15.2	72	100.0	14693.9

TRANSECT 9

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	43	63.2	8775.5
ROSA	ROSA SP.	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	1.5	204.1
SYOC	SYMPHORICARPOS OCCIDENTALIS	30.4	60.9	8.7	.0	.0	.0	.0	17.2	10.0	23	33.8	4693.9
QUGA	QUERCUS GAMBELII	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	1.5	204.1
	TOTAL	73.5	23.5	2.9	.0	.0	.0	.0	9.6	8.3	68	100.0	13877.6

TRANSECT 1[illegible]

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DEN[illegible]Y

CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	1.6	204.1
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	20	32.3	4081.6
ROSA	ROSA SP.	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	1.6	204.1
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	73.9	26.1	.0	.0	.0	.0	25.2	9.0	23	37.1	4693.9
OUGA	QUERCUS GAMBELII	.0	82.4	17.6	.0	.0	.0	.0	23.5	7.9	17	27.4	3469.4
	TOTAL	32.3	53.2	14.5	.0	.0	.0	.0	19.1	11.4	62	100.0	12653.1

TRANSECT 11

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
AMUTU	AMELANCHIER UTAHENSIS	20.0	80.0	.0	.0	.0	.0	.0	17.0	6.7	5	8.3	1020.4
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	20	33.3	4081.6
SYOC	SYMPHORICARPOS OCCIDENTALIS	14.3	64.3	14.3	7.1	.0	.0	.0	24.6	17.5	14	23.3	2857.1
OUGA	QUERCUS GAMBELII	4.8	66.7	4.8	19.0	4.8	.0	.0	36.9	34.4	21	35.0	4285.7
	TOTAL	40.0	45.0	5.0	8.3	1.7	.0	.0	21.8	25.5	60	100.0	12244.9

TRANSECT 12

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	40	69.0	8163.3
ROSA	ROSA SP.	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	1.7	204.1
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	73.3	26.7	.0	.0	.0	.0	25.3	9.2	15	25.9	3061.2
OUGA	QUERCUS GAMBELII	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	2	3.4	408.2
	TOTAL	69.0	24.1	6.9	.0	.0	.0	.0	11.0	10.2	58	100.0	11836.7

TRANSECT 13

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	4	12.5	816.3
SYOC	SYMPHORICARPOS OCCIDENTALIS	14.3	60.7	25.0	.0	.0	.0	.0	22.9	11.3	28	87.5	5714.3
	TOTAL	25.0	53.1	21.9	.0	.0	.0	.0	20.6	12.2	32	100.0	6530.6

TRANSECT 14

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
AMUTU	AMELANCHIER UTAHENSIS	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	2.1	204.1
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	11	23.4	2244.9
SYOC	SYMPHORICARPOS OCCIDENTALIS	14.3	68.6	14.3	2.9	.0	.0	.0	22.3	13.2	35	74.5	7142.9
	TOTAL	34.0	51.1	10.6	2.1	.0	2.1	.0	24.1	43.3	47	100.0	9591.8

TRANSECT 15

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
BERE	BERBERIS REPENS	100.0	.0	.0	.0	.0	.0	.0	5.0	.0	67	77.9	13673.5
SYOC	SYMPHORICARPOS OCCIDENTALIS	18.8	68.8	12.5	.0	.0	.0	.0	19.7	9.9	16	18.6	3265.3
QUGA	QUERCUS GAMBELII	.0	66.7	33.3	.0	.0	.0	.0	26.7	11.5	3	3.5	612.2
	TOTAL	81.4	15.1	3.5	.0	.0	.0	.0	8.5	8.1	86	100.0	17551.0

SUMMARY - ALL TRANSECTS

CODE	SCIENTIFIC NAME	NO OF TRANSECTS	PERCENT FREQUENCY - HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY (#/HA) MEAN	STD.DEV.
AMUTU	AMELANCHIER UTAHENSIS	15	14.3	71.4	.0	.0	.0	14.3	.0	57.9	106.9	7	.7	95.2	265.7
BERE	BERBERIS REPENS	15	93.6	6.4	.0	.0	.0	.0	.0	6.0	3.7	482	50.6	6557.8	4739.2
RHTRT	RHUS TRILOBATA	15	.0	100.0	.0	.0	.0	.0	.0	20.0	.0	1	.1	13.6	52.7
ROSA	ROSA SP.	15	.0	75.0	25.0	.0	.0	.0	.0	25.0	10.0	4	.4	54.4	93.4
RUIDS	RUBUS IDAEUS	15	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	3	.3	40.8	114.4
SYOC	SYMPHORICARPOS OCCIDENTALIS	15	13.3	54.8	26.8	5.1	.0	.0	.0	26.2	15.9	332	34.9	4517.0	1793.9
QUGA	QUERCUS GAMBELII	15	3.3	62.6	27.6	5.7	.8	.0	.0	29.2	18.6	123	12.9	1673.5	1969.9
	TOTAL	15	52.5	31.4	13.3	2.5	.1	.1	.0	16.6	18.4	952	100.0	12952.4	3914.9

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**** EVALUATION OF SAMPLING ADEQUACY ****
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DESIRED CONFIDENCE LEVEL = 80.0 PERCENT

SAMPLE SIZE =  15

MEAN SHRUB DENSITY (NO./HA) =  12952.4
SAMPLE STANDARD DEVIATION =    3914.9
MINIMUM SAMPLE SIZE TO PROVIDE DESIRED CONFIDENCE LEVEL =   3
Z STATISTIC = 1.81
CONFIDENCE LEVEL OBTAINED = 96.5 PERCENT

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SHRUB HEIGHT AND DENSITY ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

BARN CANYON-CONIFER
AFFECTED AREA
OCTOBER 1981

****

HEIGHT CLASSES

CODE	RANGE (CM)	MID-POINT (CM)
A	0-10	5
B	11-30	20
C	31-50	40
D	51-100	75
E	101-200	150
F	201-400	300
G	OVER 400	-

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TRANSECT 1

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	.0	81.8	18.2	.0	.0	.0	46.4	14.2	11	31.4	2244.9
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	2.9	204.1
QUGA	QUERCUS GAMBELII	.0	.0	.0	4.3	34.8	30.4	30.4	268.8	112.7	23	65.7	4693.9
	TOTAL	.0	.0	25.7	8.6	25.7	20.0	20.0	195.5	138.5	35	100.0	7142.9

TRANSECT 2

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	33.3	66.7	.0	.0	.0	.0	33.3	9.8	12	57.1	2449.0
ABCO	ABIES CONCOLOR	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	4.8	204.1
ABLA	ABIES LASIOCARPA	.0	.0	.0	25.0	75.0	.0	.0	131.3	37.5	4	19.0	816.3
QUGA	QUERCUS GAMBELII	.0	.0	.0	25.0	50.0	.0	25.0	194.0	142.5	4	19.0	816.3
	TOTAL	.0	19.0	38.1	9.5	28.6	.0	4.8	88.1	99.0	21	100.0	4285.7

TRANSECT 3

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	50.0	.0	.0	.0	50.0	220.5	255.3	2	22.2	408.2
PSMEM	PSEUDOTSUGA MENZIESII	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	11.1	204.1
QUGA	QUERCUS GAMBELII	.0	.0	.0	33.3	.0	16.7	50.0	275.5	160.2	6	66.7	1224.5
	TOTAL	.0	.0	11.1	22.2	11.1	11.1	44.4	249.3	161.7	9	100.0	1836.7

TRANSECT 4

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	25.0	.0	75.0	338.3	125.5	4	50.0	816.3
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	75.0	.0	25.0	212.8	125.5	4	50.0	816.3
	TOTAL	.0	.0	.0	.0	50.0	.0	50.0	275.5	134.2	3	100.0	1632.7

TRANSECT 5

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
QUGA	QUERCUS GAMBELII	.0	.0	17.5	2.5	57.5	15.0	7.5	170.2	101.0	40	100.0	8163.3
	TOTAL	.0	.0	17.5	2.5	57.5	15.0	7.5	170.2	101.0	40	100.0	8163.3

TRANSECT 6

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
QUGA	QUERCUS GAMBELII	.0	.0	.0	80.6	19.4	.0	.0	89.5	30.1	31	100.0	6326.5
	TOTAL	.0	.0	.0	80.6	19.4	.0	.0	89.5	30.1	31	100.0	6326.5

TRANSECT 7

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	50.0	.0	.0	.0	50.0	220.5	255.3	2	6.3	408.2
QUGA	QUERCUS GAMBELII	.0	.0	.0	33.3	60.0	.0	6.7	141.7	78.8	30	93.8	6122.4
	TOTAL	.0	.0	3.1	31.3	56.3	.0	9.4	146.7	91.1	32	100.0	6530.6

TRANSECT 8

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
CEMOM	CERCOCARPUS MONTANUS	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	12.5	204.1
RIBES	RIBES SP.	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	12.5	204.1
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	2	25.0	408.2
ABLA	ABIES LASIOCARPA	.0	.0	.0	50.0	50.0	.0	.0	112.5	53.0	2	25.0	408.2
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	12.5	204.1
JUOS	JUNIPERUS OSTEOSPERMA	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	12.5	204.1
	TOTAL	.0	.0	25.0	50.0	25.0	.0	.0	85.0	42.9	8	100.0	1632.7

TRANSECT 9

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
QUGA	QUERCUS GAMBELII	.0	.0	25.0	.0	75.0	.0	.0	122.5	50.9	8	100.0	1632.7
	TOTAL	.0	.0	25.0	.0	75.0	.0	.0	122.5	50.9	8	100.0	1632.7

TRANSECT 10

CODE	SCIENTIFIC NAME	PERCENT FREQUENCY-HEIGHT CLASSES A	B	C	D	E	F	G	HEIGHT (CM) MEAN	STD.DEV.	TOTAL COUNTED NO.	PERCENT	DENSITY #/HA
RIBES	RIBES SP.	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	6.3	204.1
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	50.0	50.0	.0	.0	112.5	53.0	2	12.5	408.2
QUGA	QUERCUS GAMBELII	76.9	.0	.0	15.4	.0	.0	7.7	46.2	109.7	13	81.3	265[illegible]

	TOTAL	62.5	.0	.0	25.0	6.3	.0	6.3	56.3	101.8	16	100.0	3265.3

TRANSECT 11

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CEMOM	CERCOCARPUS MONTANUS	.0	.0	.0	87.5	12.5	.0	.0	84.4	26.5	8	72.7	1632.7
RIBES	RIBES SP.	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	9.1	204.1
ACGR	ACER GRANDIDENTATUM	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	9.1	204.1
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	.0	.0	100.0	401.0	.0	1	9.1	204.1
	TOTAL	.0	.0	.0	72.7	18.2	.0	9.1	118.3	98.5	11	100.0	2244.9

TRANSECT 12

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
RIBES	RIBES SP.	80.0	20.0	.0	.0	.0	.0	.0	8.0	6.3	10	62.5	2040.8
CELEL	CERCOCARPUS LEDIFOLIUS	.0	.0	.0	.0	50.0	.0	50.0	275.5	177.5	2	12.5	408.2
JUOS	JUNIPERUS OSTEOSPERMA	.0	.0	.0	25.0	75.0	.0	.0	131.3	37.5	4	25.0	816.3
	TOTAL	50.0	12.5	.0	6.3	25.0	.0	6.3	72.3	107.7	16	100.0	3265.3

TRANSECT 13

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
JUOS	JUNIPERUS OSTEOSPERMA	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	4.3	204.1
QUGA	QUERCUS GAMBELII	40.9	.0	.0	59.1	.0	.0	.0	46.4	35.2	22	95.7	4489.3
	TOTAL	39.1	.0	.0	60.9	.0	.0	.0	47.6	34.9	23	100.0	4493.9

TRANSECT 14

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA

CEMOM	CERCOCARPUS MONTANUS	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	8	61.5	1632.7
RIBES	RIBES SP.	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	7.7	204.1
JUOS	JUNIPERUS OSTEOSPERMA	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	1	7.7	204.1
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	3	23.1	612.2
	TOTAL	.0	.0	.0	69.2	30.8	.0	.0	98.1	36.0	13	100.0	2653.1

TRANSECT 15

		PERCENT FREQUENCY-HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY
CODE	SCIENTIFIC NAME	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	#/HA
CEMOM	CERCOCARPUS MONTANUS	.0	.0	5.6	94.4	.0	.0	.0	73.1	8.2	18	40.9	3673.5
RIBES	RIBES SP.	.0	.0	.0	100.0	.0	.0	.0	75.0	.0	12	27.3	2449.0
SYOC	SYMPHORICARPOS OCCIDENTALIS	.0	.0	100.0	.0	.0	.0	.0	40.0	.0	10	22.7	2040.8
JUOS	JUNIPERUS OSTEOSPERMA	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	3	6.8	612.2
QUGA	QUERCUS GAMBELII	.0	.0	.0	.0	.0	100.0	.0	300.0	.0	1	2.3	204.1
	TOTAL	.0	.0	25.0	65.9	6.8	2.3	.0	76.5	43.4	44	100.0	8979.6

SUMMARY - ALL TRANSECTS

			PERCENT FREQUENCY - HEIGHT CLASSES							HEIGHT (CM)		TOTAL COUNTED		DENSITY (#/HA)	
CODE	SCIENTIFIC NAME	NO OF TRANSECTS	A	B	C	D	E	F	G	MEAN	STD.DEV.	NO.	PERCENT	MEAN	STD.DEV.
CEMOM	CERCOCARPUS MONTANUS	15	.0	.0	2.9	94.3	2.9	.0	.0	76.1	14.1	35	11.1	476.2	1051.0
RIBES	RIBES SP.	15	30.8	7.7	.0	57.7	3.8	.0	.0	52.1	38.6	26	8.3	353.7	777.0
SYOC	SYMPHORICARPOS OCCIDENTALIS	15	.0	11.4	82.9	5.7	.0	.0	.0	39.7	10.9	35	11.1	476.2	924.6
ABCO	ABIES CONCOLOR	15	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	.3	13.6	52.7
ABLA	ABIES LASIOCARPA	15	.0	.0	.0	33.3	66.7	.0	.0	125.0	38.7	6	1.9	81.6	228.8
ACGR	ACER GRANDIDENTATUM	15	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	.3	13.6	52.7
CELEL	CERCOCARPUS LEDIFOLIUS	15	.0	.0	13.3	13.3	26.7	.0	46.7	242.5	157.7	15	4.8	204.1	243.9
JUOS	JUNIPERUS OSTEOSPERMA	15	.0	.0	.0	30.0	70.0	.0	.0	127.5	36.2	10	3.2	136.1	251.9
PSMEM	PSEUDOTSUGA MENZIESII	15	.0	.0	.0	.0	100.0	.0	.0	150.0	.0	1	.3	13.6	52.7
QUGA	QUERCUS GAMBELII	15	10.3	.0	4.9	29.7	37.3	8.1	9.7	144.0	111.4	185	58.7	2517.0	2729.0
	TOTAL	15	8.6	1.9	13.0	35.6	28.3	4.8	7.9	121.2	104.8	315	100.0	4285.7	2544.3

****

**** EVA[illegible]TION OF SAMPLING ADEQUACY ****

```
SAMPLE SIZE =  15

MEAN SHRUB DENSITY (NO./HA) =   4285.7
SAMPLE STANDARD DEVIATION =    2544.3
MINIMUM SAMPLE SIZE TO PROVIDE DESIRED CONFIDENCE LEVEL =  12
Z STATISTIC =  .92
CONFIDENCE LEVEL OBTAINED = 82.1 PERCENT

*****************************************************************
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TREE DATA - ABSOLUTE COUNT

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL RIPARIAN - REFERENCE SITE
JULY 1981
TECH. • MORAN AND KLING

ACREAGE - 2.00

SPECIES CODE	CBH (IN)	SPECIES CODE	CBH (IN)	SPECIES CODE	CBH (IN)
ACGR	28	ACGR	34	ACGR	15
ACGR	24	ACGR	29	ACGR	16
ACGR	14	ACGR	27	ACGR	12
ACGR	10	ACGR	11	ACGR	12
ACGR	12	ACGR	36	ACGR	12
ACGR	22	ACGR	27	ACGR	30
ACGR	18	ACGR	30	ACGR	26
ACGR	33	ACGR	10	ACGR	11
PSMEM	37	PSMEM	27	PSMEM	49
PSMEM	52	PSMEM	18	PSMEM	32
PSMEM	34	PSMEM	60	PSMEM	42
PSMEM	38	PSMEM	22	PSMEM	16
PSMEM	49	PSMEM	58	PSMEM	29
PSMEM	24	PSMEM	35	POAN	64
POAN	66	POAN	38	POAN	53
POAN	82	POAN	16	POAN	15
POAN	24	POAN	50	POAN	46
POAN	60	POAN	48	POAN	67
POAN	52	POAN	42	POAN	22
POAN	52	POAN	67	POAN	59
POAN	59	POAN	56	POAN	99
POAN	74	POAN	68	POAN	13
POAN	56	POAN	48	POAN	62
POAN	5	POAN	79	POAN	18
POAN	42	POAN	47	POAN	48
POAN	58	POAN	15	POAN	47
POAN	65	POAN	61	POAN	72
POAN	45	POAN	60	POAN	66
POAN	57	POAN	60	POAN	64
POAN	64	POAN	72	POAN	37
JUOS	11	JUOS	22	JUOS	20
JUOS	18	JUOS	19	JUOS	17
JUOS	14	JUOS	15	JUOS	11
JUOS	11	JUOS	11	JUOS	13
JUOS	14	JUOS	13	JUOS	14
JUOS	12	JUOS	12	JUOS	15
PIPO	36	PIPO	76	PIPO	57
PIPO	13	PIPO	43	PIPO	90
PIPO	65	PIPO	55	PIPO	47
PIPO	10	PIPO	50		

TREE DATA - ABSOLUTE COUNT

PRICE RIVER COAL COMPANY
HELPER, UTAH

CASTLE GATE RIPARIAN - REFERENCE SITE
JULY 1981
TECH. = MORAN AND KLING
ACREAGE - 2.00

SPECIES CODE	CBH (IN)	SPECIES CODE	CBH (IN)	SPECIES CODE	CBH (IN)
POAN	22	POAN	45	POAN	20
POAN	21	POAN	18	POAN	104
POAN	72	POAN	113	POAN	77
POAN	78	POAN	76	POAN	18
POAN	20	POAN	12	POAN	14
POAN	19	POAN	24	POAN	16
POAN	22	POAN	9	POAN	53
POAN	59	POAN	59	POAN	24
POAN	39	POAN	38	POAN	92
POAN	64	POAN	53	POAN	26
POAN	27	POAN	18	POAN	43
POAN	16				

TREE DATA SHEET

PRICE RIVER COAL COMPANY
HELPER, UTAH

BARN CANYON CONIFER - AFFECTED
OCTOBER 1981
FIELD TECH. - MCGUIRE

		QUADRATS											
		1			2			3			4		
TRANSECT	POINT	SP	DIST	CBH	SP	DIST	CBH	SP	DIST	CBH	SP	DIST	CBH
1	1	PSMEM	10	15	JUOS	10	58	PSMEM	20	20	PSMEM	25	30
	2	PIPO	10	15	JUOS	15	25	ABLA	30	25	ABLA	50	30
	3	PIED	10	55	ABLA	10	25	ABLA	15	30	JUOS	30	25
	4	ABCO	40	25	PSMEM	25	40	ABLA	15	50	ABLA	25	12
	5	QUGA	25	10	JUOS	30	60	PSMEM	15	50	JUOS	3	30
	6	PIED	3	15	JUOS	16	60	ABCO	20	30	PSMEM	30	12
	7	PSMEM	8	46	JUOS	30	20	ABCO	25	20	PSMEM	40	50
	8	JUOS	5	40	PIED	30	25	PSMEM	50	12	JUOS	8	40
	9	PSMEM	50	12	ABLA	40	50	ABLA	30	25	PIED	25	12
	10	PSMEM	20	35	ABLA	8	12	PSMEM	12	15	PSMEM	20	35
	11	PIED	15	25	PIED	8	20	PIED	6	12	PIED	30	25
	12	PIED	23	8	ABCO	30	35	PIED	40	15	JUOS	8	15
	13	CELEL	30	25	PIED	40	40	PIED	20	40	PIED	30	50
	14	JUOS	40	15	ABCO	15	30	JUOS	30	60	JUOS	40	15
	15	JUOS	30	10	JUOS	20	30	JUOS	15	10	JUOS	30	20

* SP = SPECIES CODE
DIST = DISTANCE FROM POINT (FT)
CBH = CIRCUMFERENCE AT BREAST HEIGHT (INCHES)

TREE DATA SHEET

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL CONIFER - REFERENCE SITE
JULY 1981
FIELD TECH. - MORAN AND KLING

QUADRATS

TRANSECT	POINT	1 SP	1 DIST	1 CBH	2 SP	2 DIST	2 CBH	3 SP	3 DIST	3 CBH	4 SP	4 DIST	4 CBH
1	1	PSMEM	16	22	PSMEM	8	SA	PSMEM	21	19	PSMEM	10	16
	2	PSMEM	7	45	PSMEM	1	9	PSMEM	6	12	PSMEM	20	15
	3	PSMEM	6	S	PSMEM	7	12	PIPO	15	36	PSMEM	8	S
	4	PSMEM	6	S	PSMEM	17	24	PSMEM	18	13	PSMEM	13	18
	5	PSMEM	22	S	PIPO	20	18	JUOS	7	15	PSMEM	20	SA
	6	PSMEM	2	21	PSMEM	4	S	JUOS	9	9	PSMEM	14	20
	7	PSMEM	3	16	PSMEM	21	48	PIPO	16	37	PSMEM	6	S
	8	PSMEM	7	SA	PIPO	4	S	PSMEM	15	S	PSMEM	35	31
	9	PSMEM	8	34	PSMEM	5	29	PSMEM	31	22	ABCO	24	17
	10	PSMEM	7	S	PSMEM	5	S	JUOS	8	S	PSMEM	4	S
	11	ABCO	1	S	ABCO	1	S	PSMEM	13	37	PSMEM	9	12
	12	PSMEM	5	26	PSMEM	7	23	PIPO	18	13	PSMEM	15	24
	13	ABCO	4	S	ABCO	12	S	JUOS	27	S	ABCO	9	S
	14	PSMEM	3	13	JUOS	4	12	PSMEM	8	30	PIPO	13	55
	15	PSMEM	5	21	PSMEM	4	24	PSMEM	12	39	PSMEM	32	40
	16	PSMEM	5	42	PSMEM	5	26	PSMEM	9	21	PSMEM	22	23
	17	PSMEM	11	16	PSMEM	16	34	PSMEM	34	18	JUOS	11	14
	18	JUOS	6	15	PSMEM	11	17	PSMEM	14	31	PSMEM	19	22
	19	PSMEM	12	22	PSMEM	6	35	PSMEM	6	26	PSMEM	32	47
	20	PSMEM	11	38	PIPO	20	73	PSMEM	14	22	PSMEM	15	23
	21	PSMEM	11	S	JUOS	11	17	PSMEM	13	SA	PSMEM	15	SA
	22	PSMEM	12	S	PSMEM	15	SA	PSMEM	9	SA	JUOS	10	12
	23	PSMEM	13	38	PSMEM	10	SA	PSMEM	12	13	PSMEM	9	S
	24	PSMEM	4	13	PSMEM	10	SA	PSMEM	8	SA	PSMEM	12	15
	25	PSMEM	6	SA	PSMEM	10	12	PSMEM	26	S	PSMEM	16	23
	26	PSMEM	20	SA	PSMEM	12	13	PSMEM	15	22	PSMEM	18	SA
	27	PSMEM	9	19	PSMEM	11	SA	PSMEM	7	22	PSMEM	24	20
	28	PSMEM	10	24	PIPO	26	18	ABCO	25	14	PSMEM	21	19

* SP = SPECIES CODE
DIST = DISTANCE FROM POINT (FT)
CBH = CIRCUMFERENCE AT BREAST HEIGHT (INCHES)

TREE DATA SHEET

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL PINYON-JUNIPER - REFERENCE SITE
OCTOBER 1981
FIELD TECH. - MCGUIRE

QUADRATS

		1			2			3			4		
TRANSECT	POINT	SP	DIST	CBH	SP	DIST	CBH	SP	DIST	CBH	SP	DIST	CBH
1	1	JUOS	20	40	CELEL	40	20	JUOS	30	20	CELEL	40	20
	2	PIED	25	35	PIED	35	38	JUOS	50	45	PIED	10	55
	3	PIED	50	42	JUOS	60	20	JUOS	5	30	PIED	20	25
	4	JUOS	70	85	PIED	60	48	PIED	15	35	JUOS	30	22
	5	CELEL	25	10	JUOS	70	40	JUOS	25	25	CELEL	30	12
	6	QUGA	30	15	CELEL	60	20	CELEL	20	18	JUOS	8	15
	7	PIED	8	25	JUOS	20	35	JUOS	10	40	PSMEM	20	12
	8	CELEL	6	20	JUOS	8	40	CELEL	40	20	JUOS	60	30
	9	PSMEM	80	40	JUOS	120	35	JUOS	50	60	JUOS	40	25
	10	PIED	20	12	JUOS	50	40	PIED	8	20	CELEL	25	20
	11	JUOS	40	30	PIED	70	50	PIED	40	32	JUOS	30	18
	12	JUOS	40	35	CELEL	35	12	JUOS	45	40	CELEL	25	16
	13	CELEL	30	25	CELEL	20	10	JUOS	10	80	JUOS	30	25
	14	PIED	25	30	JUOS	60	25	CELEL	15	18	PIED	25	27
	15	JUOS	50	45	PIED	25	55	JUOS	10	25	JUOS	30	26

* SP = SPECIES CODE
DIST = DISTANCE FROM POINT (FT)
CBH = CIRCUMFERENCE AT BREAST HEIGHT (INCHES)

TREE DATA SHEET

PRICE RIVER COAL COMPANY
HELPER, UTAH

BARN CANYON PINYON-JUNIPER - AFFECTED
OCTOBER 1981
FIELD TECH. - MCGUIRE

		QUADRATS											
		1			2			3			4		
TRANSECT	POINT	SP	DIST	CBH	SP	DIST	CBH	SP	DIST	CBH	SP	DIST	CBH
1	1	JUOS	6	18	ABCO	30	16	QUGA	12	20	QUGA	20	16
	2	ABCO	100	16	PIED	15	44	JUOS	10	10	QUGA	12	8
	3	PIED	15	35	PIED	25	12	JUOS	34	40	QUGA	20	8
	4	JUOS	20	35	JUOS	10	30	JUOS	6	60	PIED	25	30
	5	JUOS	12	15	JUOS	10	8	JUOS	10	12	PIED	8	15
	6	PIED	10	40	JUOS	20	25	PIED	70	50	PIED	50	35
	7	PIED	40	45	JUOS	20	60	ABLA	40	50	PIED	30	50
	8	PIED	30	30	PIPO	5	10	PIED	5	20	PIED	10	20
	9	PIED	12	55	QUGA	50	8	PIED	40	30	PIED	60	25
	10	JUOS	25	12	PIED	35	30	PIED	30	15	PIED	30	30
	11	PIED	45	50	PIED	20	35	JUOS	15	60	JUOS	25	45
	12	PIED	45	20	PIED	40	40	PIED	10	20	PIED	30	25
	13	JUOS	30	55	JUOS	10	6	PIED	25	35	JUOS	30	20
	14	PIED	8	50	JUOS	5	60	JUOS	25	40	PIED	30	40
	15	PIED	8	40	PIED	15	30	JUOS	20	10	PIED	25	30

* SP = SPECIES CODE
DIST = DISTANCE FROM POINT (FT)
CBH = CIRCUMFERENCE AT BREAST HEIGHT (INCHES)

TREE ANALYSIS - ABSOLUTE COUNT

PRICE RIVER COAL COMPANY
HELPER, UTAH

CASTLE GATE RIPARIAN - REFERENCE SITE
JULY 1981

ACREAGE OF TREE STAND = 2.00

SPECIES CODE	SCIENTIFIC NAME	DENSITY (#/HA)	N	BASAL AREA (CM2) MEAN	STD. DEV.
POAN	POPULUS ANGUSTIFOLIA	41.99	34	1292.10	1649.66
	TOTAL	41.99	34	1292.10	1649.66

TREE ANALYSIS - ABSOLUTE COUNT

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL RIPARIAN - REFERENCE SITE
JULY 1981

ACREAGE OF TREE STAND = 2.00

SPECIES CODE	SCIENTIFIC NAME	DENSITY (#/HA)	N	BASAL AREA (CM2) MEAN	STD. DEV.
ACGR	ACER GRANDIDENTATUM	29.64	24	260.53	198.58
PSMEM	PSEUDOTSUGA MENZIESII	20.99	17	775.00	534.04
POAN	POPULUS ANGUSTIFOLIA	60.51	49	1576.48	986.18
JUOS	JUNIPERUS OSTEOSPERMA	22.23	18	114.26	55.01
PIPO	PINUS PONDEROSA	13.59	11	1516.78	1223.42
	TOTAL	146.96	119	969.89	984.59

TREE BASAL AREA ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL PINYON-JUNIPER - REFERENCE SITE
OCTOBER 1981

***** SUMMARY *****

CODE	SCIENTIFIC NAME	N	BASAL AREA (CM2) MEAN	S.D.
CELEL	CERCOCARPUS LEDIFOLIUS	14	162.0	77.2
JUOS	JUNIPERUS OSTEOSPERMA	28	786.3	850.3
PIED	PINUS EDULIS	15	717.4	477.8
PSMEM	PSEUDOTSUGA MENZIESII	2	447.7	528.6
QUGA	QUERCUS GAMBELII	1	115.5	.0
	TOTAL	60	600.9	679.2

TREE BASAL AREA ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

BARN CANYON PINYON-JUNIPER - AFFECTED
OCTOBER 1981

***** SUMMARY *****

CODE	SCIENTIFIC NAME	N	BASAL AREA (CM2) MEAN	S.D.
ABCO	ABIES CONCOLOR	2	131.4	.0
ABLA	ABIES LASIOCARPA	1	1283.5	.0
JUOS	JUNIPERUS OSTEOSPERMA	20	691.5	716.6
PIED	PINUS EDULIS	31	629.8	406.4
PIPO	PINUS PONDEROSA	1	51.3	.0
QUGA	QUERCUS GAMBELII	5	87.1	78.7
	TOTAL	60	589.8	543.8

TREE DENSITY AND BASAL AREA ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

CRANDALL CONIFER - REFERENCE SITE
JULY 1981

***** SUMMARY - ALL POINTS *****

CODE	SCIENTIFIC NAME	N	DENSITY (#/HA) MEAN	DENSITY (#/HA) S.D.	BASAL AREA (CM2) MEAN	BASAL AREA (CM2) S.D.
ABCO	ABIES CONCOLOR	2	76.0	292.6	124.5	33.8
JUOS	JUNIPERUS OSTEOSPERMA	7	96.0	192.9	95.6	35.3
PIPO	PINUS PONDEROSA	7	60.2	127.1	868.1	968.0
PSMEM	PSEUDOTSUGA MENZIESII	60	729.3	518.4	338.7	278.2
	TOTAL	76	961.6	751.6	359.4	410.4

****

EVALUATION OF SAMPLING ADEQUACY
****

DESIRED CONFIDENCE LEVEL = 80.0 PERCENT

SAMPLE SIZE = 28 POINTS

MEAN TREE DENSITY = 961.6 TREES/HECTARE
STANDARD DEVIATION = 751.6

MINIMUM SAMPLE SIZE TO ACHIEVE SAMPLING ADEQUACY = 22 POINTS

Z STATISTIC = .96

CONFIDENCE LEVEL OBTAINED = 33.1 PERCENT

****

TREE DENSITY AND BASAL AREA ESTIMATES

PRICE RIVER COAL COMPANY
HELPER, UTAH

BARN CANYON CONIFER - AFFECTED
OCTOBER 1981

***** SUMMARY - ALL POINTS *****

CODE	SCIENTIFIC NAME	N	DENSITY (#/HA) MEAN	DENSITY (#/HA) S.D.	BASAL AREA (CM2) MEAN	BASAL AREA (CM2) S.D.
ABCO	ABIES CONCOLOR	5	15.4	24.7	415.9	160.5
ABLA	ABIES LASIOCARPA	9	34.7	60.7	511.3	459.5
CELEL	CERCOCARPUS LEDIFOLIUS	1	2.0	7.7	320.9	.0
JUOS	JUNIPERUS OSTEOSPERMA	17	63.7	61.8	667.1	697.2
PIED	PINUS EDULIS	13	61.6	126.2	466.1	497.9
PIPO	PINUS PONDEROSA	1	2.6	10.1	115.5	.0
PSMEM	PSEUDOTSUGA MENZIESII	13	70.4	119.1	527.1	467.9
QUGA	QUERCUS GAMBELII	1	5.4	20.9	51.3	.0
	TOTAL	60	255.7	144.5	523.7	523.6

****

EVALUATION OF SAMPLING ADEQUACY
****

DESIRED CONFIDENCE LEVEL = 80.0 PERCENT

SAMPLE SIZE = 15 POINTS

MEAN TREE DENSITY = 255.7 TREES/HECTARE
STANDARD DEVIATION = 144.5

MINIMUM SAMPLE SIZE TO ACHIEVE SAMPLING ADEQUACY = 11 POINTS

Z STATISTIC = .97

CONFIDENCE LEVEL OBTAINED = 83.4 PERCENT

****

VEGETATION SPECIES LIST

PRICE RIVER COAL COMPANY
HELPER, UTAH

PINYON-JUNIPER
1981

LIFE FORM	SPECIES CODE	SCIENTIFIC NAME	COMMON NAME
GRASS	AGINI		INTERMEDIATE WHEATGRASS
	AGSM		WESTERN WHEATGRASS
	BRTET		CHEATGRASS BROME
	HOJUJ	HORDEUM JUBATUM	FOXTAIL BARLEY
	ORHYH	ORYZOPSIS HYMENOIDES	INDIAN RICEGRASS
	POA	POA SP.	BLUEGRASS
FORB	ANPU	ANTENNARIA PULCHERRIMA	SHOWY PUSSYTOES
	ARHO	ARABIS HOLBOELLII	HOLBOELL ROCKCRESS
	ARLUL	ARTEMISIA LUDOVICIANA	LOUISIANA SAGEWORT
	ASAS2	ASTRAGALUS ASCLEPIADOIDES	MILKWEED MILKVETCH
	ASFL	ASTRAGALUS FLAVUS	MILKVETCH
	ATAR6	ATRIPLEX ARGENTEA	TUMBLING SALTBUSH
	CANUN	CALOHORTUS NUTTALLI	SEGO MARIPOSALILY
	CHGL	CHENOPODIUM GLAUCUM	OAKLEAF GOOSEFOOT
	COAU	CORYDALIS AUREA	GOLDEN CORYDALIS
	CRHU	CRYPTANTHA HUMILIS	CRYPTANTHA
	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
	ERLO	ERIGERON LONCHOPHYLLUS	SPEARLEAF FLEABANE
	ERAL	ERIOGONUM ALATUM	WING ERIOGONUM
	ERIN2	ERYSIMUM INCONSPICUUM	SMALLFLOWER ERYSIMUM
	EURO	EUPHORBIA ROBUSTA	ROBUST EUPHORBIA
	GEVIV	GERANIUM VISCOSSIMUM	STICKY GERANIUM
	GIAG5	GILIA AGGREGATA	SKYROCKET GILIA
	HAJE	HACKELIA JESSICAE	JESSICAE STICKSEED
	HYRI	HYMENOXYS RICHARDSONII	PINGUE HYMENOXYS
	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
	PENST	PENSTEMON SP.	BEARDTONGUE
	PHCRC	PHACELIA CRENULATA	PHACELIA
	PHDE	PHACELIA DEMISSA	PHACELIA
	PHLOX	PHLOX SP.	PHLOX
	SEMU2	SENECIO MULTILOBATUS	LOBELEAF GROUNDSEL
	STPI2	STANLEYA PINNATA	DESERT PRINCESSPLUME
SHRUB	ARTRT	ARTEMISIA TRIDENTATA	BASIN BIG SAGEBRUSH
	ATCO	ATRIPLEX CONFERTIFOLIA	SHADSCALE SALTBUSH
	CEMOM	CERCOCARPUS MONTANUS	TRUE MOUNTAIN MAHOGANY
	CHNAN	CHRYSOTHAMNUS NAUSEOSUS	RUBBER RABBITBRUSH
	CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	DOUGLAS RABBITBRUSH
	PHMIM	PHILADELPHUS MICROPHYLLUS	LITTLELEAF MOCK ORANGE
	RIBES	RIBES SP.	CURRANT
	SYOC	SYMPHORICARPOS OCCIDENTALIS	WESTERN SNOWBERRY
TREE	ABCO	ABIES CONCOLOR	WHITE FIR
	ACGR	ACER GRANDIDENTATUM	BIGTOOTH MAPLE
	CELEL	CERCOCARPUS LEDIFOLIUS	CURLLEAF MOUNTAIN MAHOGANY
	JUOS	JUNIPERUS OSTEOSPERMA	UTAH JUNIPER
	PIED	PINUS EDULIS	PINION PINE
	PIPO	PINUS PONDEROSA	PONDEROSA PINE

POAL2	POPULUS ALBA	WHITE POPLAR
PSMEM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR
QUGA	QUERCUS GAMBELII	GAMBEL OAK

UTAH ENDANGERED OR THREATENED SPECIES

NONE ENCOUNTERED

NOXIOUS WEEDS

NONE ENCOUNTERED

PRIMARY SELENIUM INDICATORS

FORB	ASFL	ASTRAGALUS FLAVUS	MILKVETCH
FORB	STPI2	STANLEYA PINNATA	DESERT PRINCESSPLUME

DESIGNATED WEEDS

GRASS	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
GRASS	HOJUJ	HORDEUM JUBATUM	FOXTAIL BARLEY
FORB	ATAR6	ATRIPLEX ARGENTEA	TUMBLING SALTBUSH
FORB	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
FORB	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS

VEGETATION SPECIES LIST

PRICE RIVER COAL COMPANY
HELPER, UTAH

MIXED BRUSH
1981

LIFE FORM	SPECIES CODE	SCIENTIFIC NAME	COMMON NAME
GRASS	AGCR	AGROPYRON CRISTATUM	FAIRWAY WHEATGRASS
	AGDA	AGROPYRON DASYSTACHYUM	THICKSPIKE WHEATGRASS
	AGINI	AGROPYRON INTERMEDIUM	INTERMEDIATE WHEATGRASS
	AGSP3	AGROPYRON SPICATUM	BLUEBUNCH WHEATGRASS
	AGTR	AGROPYRON TRACHYCAULUM	SLENDER WHEATGRASS
	BRCI	BROMUS CILIATUS	FRINGED BROME
	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
	DECA	DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS
	HOJUJ	HORDEUM JUBATUM	FOXTAIL BARLEY
	MUFI	MUHLENBERGIA FILIFORMIS	PULLUP MUHLY
	ORHYH	ORYZOPSIS HYMENOIDES	INDIAN RICEGRASS
	POCO	POA COMPRESSA	CANADA BLUEGRASS
	POPA	POA PALUSTRIS	FOWL BLUEGRASS
	POPR	POA PRATENSIS	KENTUCKY BLUEGRASS
	STCO2	STIPA COLUMBIANA	SUBALPINE NEEDLEGRASS
	STCO3	STIPA COMATA	NEEDLE-AND-THREAD
	STLE	STIPA LETTERMANI	LETTERMAN NEEDLEGRASS
FORB	ACMIM	ACHILLEA MILLEFOLIUM	COMMON YARROW
	AMTR7	AMBROSIA TRIFIDA	GIANT RAGWEED
	ANSE	ANDROSACE SEPTENTRIONALIS	PYGMY ROCKJASMINE
	ANMI5	ANTENNARIA MICROPHYLLA	LITTLELEAF PUSSYTOES
	ARHO	ARABIS HOLBOELLII	HOLBOELL ROCKCRESS
	ARLI	ARABIS LIGNIFERA	WOODY ROCKCRESS
	ARLUL	ARTEMISIA LUDOVICIANA	LOUISIANA SAGEWORT
	ASAD7	ASTER ADSCENDENS	LONGLEAF ASTER
	ASARE	ASTER ARENOSUS	SMALLFLOWER ASTER
	ASGL	ASTER GLAUCODES	BLUELEAF ASTER
	ASDI	ASTRAGALUS DIVERSIFOLIUS	MEADOW MILKVETCH
	CACH5	CARDARIA CHALEPENSIS	WHITETOP
	CANU5	CARDUUS NUTANS	MUSK BRISTLETHISTLE
	CHAL	CHENOPODIUM ALBUM	LAMBSQUARTERS GOOSEFOOT
	CHBE	CHENOPODIUM BERLANDIERI	PITSEED GOOSEFOOT
	CHGL	CHENOPODIUM GLAUCUM	OAKLEAF GOOSEFOOT
	CIPU	CIRSIUM PULCHELLUM	THISTLE
	CLLI2	CLEMATIS LINGUSTICIFOLIA	WESTERN VIRGINSBOWER
	CLSE	CLEOME SERRULATA	BEE SPIDERFLOWER
	COAR2	CONVOLVULUS ARVENSIS	FIELD BINDWEED
	CRHU	CRYPTANTHA HUMILIS	CRYPTANTHA
	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
	DESC	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
	ERLO	ERIGERON LONCHOPHYLLUS	SPEARLEAF FLEABANE
	ERAL	ERIOGONUM ALATUM	WING ERIOGONUM
	ERCE	ERIOGONUM CERNUUM	NODDING ERIOGONUM
	ERIN3	ERYSIMUM INCONSPICUUM	SMALLFLOWER ERYSIMUM
	GAAPA	GALIUM APARINE	CATCHWEED BEDSTRAW
	GACO2	GALIUM COLORADOENSE	COLORADO BEDSTRAW
	GEVIV	GERANIUM VISCOSSIMUM	STICKY GERANIUM
	GIAG5	GILIA AGGREGATA	SKYROCKET GILIA

	GRSQ	GRINDELIA SQUARROSA	CURLYCUP GUMWEED
	HASP2	HAPLOPAPPUS SPINULOSUS	IRONPLANT GOLDENWEED
	HAWA5	HAPLOPAPPUS WATSONII	WATSON GOLDENWEED
	HEOC	HEDUSARUM OCCIDENTALE	WESTERN SWEETVETCH
	HEUN	HELIANTHELLA UNIFLORA	ONEFLOWER HELIANTHELLA
	HEPE	HELIANTHUS PETIOLARIS	PRAIRIE SUNFLOWER
	HEPA	HEUCHERA PARVIFOLIA	LITTLELEAF ALUMROOT
	HYFIF	HYMENOPAPPUS FILIFOLIUS	FINELEAF HYMENOPAPPUS
	HYRI	HYMENOXYS RICHARDSONII	PINGUE HYMENOXYS
	IVAX	IVA AXILLARIS	POVERTY SUMPWEED
	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
	LAOC	LAPPULA OCCIDENTALIS	ANNUAL STICKSEED
	LALA	LATHYRUS LANSZWERTII	THICKLEAF PEAVINE
	LUAR	LUPINUS ARGENTEUS	SILVERY LUPINE
	LUSE	LUPINUS SERICEUS	SILKY LUPINE
	MACA	MACHAERANTHERA CANESCENS	HOARY ASTER
	MEAL	MELILOTUS ALBA	WHITE SWEETCLOVER
	MOFI	MONARDA FISTULOSA	WILDBERGAMOT BEEBALM
	NECA2	NEPETA CATARIA	CATNIP
	OECA	OENOTHERA CAESPITOSA	TUFTED EVENINGPRIMROSE
	PECY	PENSTEMON CYANANTHUS	WASATCH PENSTEMON
	PECY2	PENSTEMON CYANEUS	PENSTEMON
	PEWA2	PENSTEMON WATSONII	WATSON PENSTEMON
	PHAU	PHLOX AUSTROMONTANA	DESERT PHLOX
	PHLO	PHLOX LONGIFOLIA	LONGLEAF PHLOX
	RUSA	RUMEX SALICIFOLIUS	WILLOWLEAF DOCK
	SAIB	SALSOLA IBERICA	SALTWORT
	SAKA	SALSOLA KALI	COMMON RUSSIANTHISTLE
	SEMU2	SENECIO MULTILOBATUS	LOBELEAF GROUNDSEL
	SEPA2	SENECIO PAUPERCULUS	BALSAM GROUNDSEL
	SIAL	SISYMBRIUM ALTISSIMUM	TUMBLING HEDGEMUSTARD
	SILI5	SISYMBRIUM LINIFOLIUM	TUMBLEMUSTARD
	SMRAA	SMILACINA RACEMOSA	WILDSPIKENARD FALSESOLOMONSEAL
	SOTR	SOLANUM TRIFLORUM	CUTLEAF NIGHTSHADE
	SOSP3	SOLIDAGO SPARSIFLORA	GOLDENROD
	SOAR	SONCHUS ARVENSIS	FIELD SOWTHISTLE
	SPMU	SPHAERALCEA MUNROANA	MUNRO GLOBEMALLOW
	STEX	STEPHANOMERIA EXIGUA	WIRELETTUCE
	TROU	TRAGOPOGON DUBIUS	YELLOW SALSIFY
	URDI	URTICA DIOICA	STINGING NETTLE
	VETH	VERBASCUM THAPSUS	FLANNEL MULLEIN
SUB-SHRUB	ARUV	ARCTOSTAPHYLOS UVA-URSI	BEARBERRY
	ARFR	ARTEMISIA FRIGIDA	FRINGED SAGEBRUSH
	PAMY	PACHISTIMA MYRSINITA	MYRTLE PACHISTIMA
	XASA	XANTHOCEPHALUM SAROTHRAE	BROOM SNAKEWEED
SHRUB	AMUTL	AMELANCHIER UTAHENSIS	UTAH SERVICEBERRY
	ARTR1	ARTEMISIA TRIDENTATA	BASIN BIG SAGEBRUSH
	ATCA	ATRIPLEX CANESCENS	FOURWING SALTBUSH
	ATHO7	ATRIPLEX HORTENSIS	SALTBUSH
	BERE	BERBERIS REPENS	CREEPING BARBERRY
	CEMOM	CERCOCARPUS MONTANUS	TRUE MOUNTAIN MAHOGANY
	CHNAN	CHRYSOTHAMNUS NAUSEOSUS	RUBBER RABBITBRUSH
	CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	DOUGLAS RABBITBRUSH
	EPVI	EPHEDRA VIRIDIS	GREEN MORMON TEA
	HODU5	HOLODISCUS DUMOSUS	BUSH OCEANSPRAY
	PHMA	PHYSOCARPUS MALVACEUS	MALLOW NINEBARK
	PRVIC	PRUNUS VIRGINIANA	COMMON CHOKECHERRY
	RHTR1	RHUS TRILOBATA	SUMAC
	RICEC	RIBES CEREUM	WAX CURRENT
	RIBES	RIBES SP.	CURRANT
	ROWOO	ROSA WOODSII	WOODS ROSE
	SALIX	SALIX SP.	WILLOW

	SYOC	SYMPHORICARPOS OCCIDENTALIS	WESTERN SNOWBERRY
	TACHE	TAMARIX CHINENSIS	TAMARIX
TREE	ABCO	ABIES CONCOLOR	WHITE FIR
	ABLA	ABIES LASIOCARPA	SUBALPINE FIR
	ACGR	ACER GRANDIDENTATUM	BIGTOOTH MAPLE
	BEGL	BETULA GLANDULOSA	BOG BIRCH
	CELEL	CERCOCARPUS LEDIFOLIUS	CURLLEAF MOUNTAIN MAHOGANY
	JUOS	JUNIPERUS OSTEOSPERMA	UTAH JUNIPER
	PIED	PINUS EDULIS	PINION PINE
	PIPO	PINUS PONDEROSA	PONDEROSA PINE
	POAN	POPULUS ANGUSTIFOLIA	NARROWLEAF COTTONWOOD
	POSA	POPULUS SARGENTII	PLAINS COTTONWOOD
	PSMEM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR
	QUGA	QUERCUS GAMBELII	GAMBEL OAK
SUCCULENT	OPFRF	OPUNTIA FRAGILIS	BRITTLE PRICKLYPEAR
	OPPO	OPUNTIA POLYACANTHA	PLAINS PRICKLYPEAR

UTAH ENDANGERED OR THREATENED SPECIES

NONE ENCOUNTERED

NOXIOUS WEEDS

FORB	CACH5	CARDARIA CHALEPENSIS	WHITETOP
FORB	CANU5	CARDUUS NUTANS	MUSK BRISTLETHISTLE
FORB	COAR2	CONVOLVULUS ARVENSIS	FIELD BINDWEED

PRIMARY SELENIUM INDICATORS

NONE ENCOUNTERED

DESIGNATED WEEDS

GRASS	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
GRASS	HOJUJ	HORDEUM JUBATUM	FOXTAIL BARLEY
FORB	CACH5	CARDARIA CHALEPENSIS	WHITETOP
FORB	CANU5	CARDUUS NUTANS	MUSK BRISTLETHISTLE
FORB	CHAL	CHENOPODIUM ALBUM	LAMBSQUARTERS GOOSEFOOT
FORB	CLSE	CLEOME SERRULATA	BEE SPIDERFLOWER
FORB	COAR2	CONVOLVULUS ARVENSIS	FIELD BINDWEED
FORB	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
FORB	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
FORB	GAAPA	GALIUM APARINE	CATCHWEED BEDSTRAW
FORB	GRSQ	GRINDELIA SQUARROSA	CURLYCUP GUMWEED
FORB	IVAX	IVA AXILLARIS	POVERTY SUMPWEED
FORB	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
FORB	LAOC	LAPPULA OCCIDENTALIS	ANNUAL STICKSEED
FORB	NECA2	NEPETA CATARIA	CATNIP
FORB	SAKA	SALSOLA KALI	COMMON RUSSIANTHISTLE
FORB	SIAL	SISYMBRIUM ALTISSIMUM	TUMBLING MEDGEMUSTARD
FORB	SOAR	SONCHUS ARVENSIS	FIELD SOWTHISTLE
FORB	TROU	TRAGOPOGON DUBIUS	YELLOW SALSIFY
FORB	UROI	URTICA DIOICA	STINGING NETTLE
FORB	VETH	VERBASCUM THAPSUS	FLANNEL MULLEIN
SHRUB	TACHE	TAMARIX CHINENSIS	TAMARIX

VEGETATION SPECIES LIST

PRICE RIVER COAL COMPANY
HELPER, UTAH

GRASS SAGE
1981

LIFE FORM	SPECIES CODE	SCIENTIFIC NAME	COMMON NAME
GRASS	AGCR	AGROPYRON CRISTATUM	FAIRWAY WHEATGRASS
	AGDA	AGROPYRON DASYSTACHYUM	THICKSPIKE WHEATGRASS
	AGINI	AGROPYRON INTERMEDIUM	INTERMEDIATE WHEATGRASS
	AGSM	AGROPYRON SMITHII	WESTERN WHEATGRASS
	AGSP3	AGROPYRON SPICATUM	BLUEBUNCH WHEATGRASS
	AGSUS	AGROPYRON SUBSECUNDUM	BEARDED WHEATGRASS
	AGTR	AGROPYRON TRACHYCAULUM	SLENDER WHEATGRASS
	BOGR	BOUTELOUA GRACILIS	BLUE GRAMA
	BRIN	BROMUS INERMIS	SMOOTH BROME
	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
	MUFI	MUHLENBERGIA FILIFORMIS	PULLUP MUHLY
	ORHYH	ORYZOPSIS HYMENOIDES	INDIAN RICEGRASS
	POPA	POA PALUSTRIS	FOWL BLUEGRASS
	POPR	POA PRATENSIS	KENTUCKY BLUEGRASS
	STCO3	STIPA COMATA	NEEDLE-AND-THREAD
FORB	ACMIM	ACHILLEA MILLEFOLIUM	COMMON YARROW
	ARLI	ARABIS LIGNIFERA	WOODY ROCKCRESS
	ARDR	ARTEMISIA DRACUNCULUS	TARRAGON SAGEWORT
	ARLUL	ARTEMISIA LUDOVICIANA	LOUISIANA SAGEWORT
	ASSP	ASCLEPIAS SPECIOSA	SHOWY MILKWEED
	ASAD7	ASTER ADSCENDENS	LONGLEAF ASTER
	ASARE	ASTER ARENOSUS	SMALLFLOWER ASTER
	ASDI	ASTRAGALUS DIVERSIFOLIUS	MEADOW MILKVETCH
	ASTRA	ASTRAGALUS SP.	MILKVETCH
	CACH5	CARDARIA CHALEPENSIS	WHITETOP
	CACH3	CASTILLEJA CHROMOSA	DESERT INDIANPAINTBRUSH
	CERE2	CENTAUREA REPENS	RUSSIAN KNAPWEED
	CHAL	CHENOPODIUM ALBUM	LAMBSQUARTERS GOOSEFOOT
	CHBE	CHENOPODIUM BERLANDIERI	PITSEED GOOSEFOOT
	CIPU	CIRSIUM PULCHELLUM	THISTLE
	CLLI2	CLEMATIS LINGUSTICIFOLIA	WESTERN VIRGINSBOWER
	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
	DEPI	DESCURAINIA PINNATA	PINNATE TANSYMUSTARD
	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
	ERCO7	ERIOGONUM CORYMBOSUM	CORYMBED ERIOGONUM
	ERMI5	ERIOGONUM MICROTHECUM	WILD BUCKWHEAT
	ERCI	ERODIUM CICUTARIUM	ALFILERIA
	GRSQ	GRINDELIA SQUARROSA	CURLYCUP GUMWEED
	HAGL	HALOGETON GLOMERATUS	HALOGETON
	HAWA5	HAPLOPAPPUS WATSONII	WATSON GOLDENWEED
	HEUN	HELIANTHELLA UNIFLORA	ONEFLOWER HELIANTHELLA
	HYRI	HYMENOXYS RICHARDSONII	PINGUE HYMENOXYS
	IVAX	IVA AXILLARIS	POVERTY SUMPWEED
	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
	LAOC	LAPPULA OCCIDENTALIS	ANNUAL STICKSEED
	LEDED	LEPIDIUM DENSIFLORUM	PRAIRIE PEPPERWEED
	LISE	LINANTHUS SEPTENTRIONALIS	GILIA
	LUSE	LUPINUS SERICEUS	SILKY LUPINE

	LYGR	LYGODESMIA GRANDIFLORA	SKELETONPLANT
	MACA	MACHAERANTHERA CANESCENS	HOARY ASTER
	MONU	MONOLEPIS NUTTALLIANA	NUTTALL MONOLEPIS
	NECA2	NEPETA CATARIA	CATNIP
	PECY	PENSTEMON CYANANTHUS	WASATCH PENSTEMON
	PEEA	PENSTEMON EATONII	EATON PENSTEMON
	PEWA2	PENSTEMON WATSONII	WATSON PENSTEMON
	POAV	POLYGONUM AVICULARE	PROSTRATE KNOTWEED
	SAIB	SALSOLA IBERICA	SALTWORT
	SAKA	SALSOLA KALI	COMMON RUSSIANTHISTLE
	SEMU2	SENECIO MULTILOBATUS	LOBELEAF GROUNDSEL
	SEPA2	SENECIO PAUPERCULUS	BALSAM GROUNDSEL
	SIAL	SISYMBRIUM ALTISSIMUM	TUMBLING HEDGEMUSTARD
	SILI5	SISYMBRIUM LINIFOLIUM	TUMBLEMUSTARD
	SOSP3	SOLIDAGO SPARSIFLORA	GOLDENROD
	STPI2	STANLEYA PINNATA	DESERT PRINCESSPLUME
	TAOF	TARAXACUM OFFICINALE	COMMON DANDELION
	THAR	THLASPI ARVENSE	FIELD PENNYCRESS
	TROU	TRAGOPOGON DUBIUS	YELLOW SALSIFY
	URDI	URTICA DIOICA	STINGING NETTLE
	VIAMM	VICIA AMERICANA	AMERICAN VETCH
SUB-SHRUB	ARFR	ARTEMISIA FRIGIDA	FRINGED SAGEBRUSH
	XASA	XANTHOCEPHALUM SAROTHRAE	BROOM SNAKEWEED
SHRUB	AMALA	AMELANCHIER ALNIFOLIA	SASKATOON SERVICEBERRY
	AMUTU	AMELANCHIER UTAHENSIS	UTAH SERVICEBERRY
	ARNO	ARTEMISIA NOVA	BLACK SAGEBRUSH
	ARTRT	ARTEMISIA TRIDENTATA	BASIN BIG SAGEBRUSH
	ATCA	ATRIPLEX CANESCENS	FOURWING SALTBUSH
	BERE	BERBERIS REPENS	CREEPING BARBERRY
	CEMOM	CERCOCARPUS MONTANUS	TRUE MOUNTAIN MAHOGANY
	CHNAN	CHRYSOTHAMNUS NAUSEOSUS	RUBBER RABBITBRUSH
	CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	DOUGLAS RABBITBRUSH
	EPVI	EPHEDRA VIRIDIS	GREEN MORMON TEA
	JUCOS	JUNIPERUS COMMUNIS	MOUNTAIN COMMON JUNIPER
	PRVIC	PRUNUS VIRGINIANA	COMMON CHOKECHERRY
	RHTRT	RHUS TRILOBATA	SUMAC
	RICEC	RIBES CEREUM	WAX CURRENT
	ROWOO	ROSA WOODSII	WOODS ROSE
	SYOC	SYMPHORICARPOS OCCIDENTALIS	WESTERN SNOWBERRY
	TECA	TETRADYMIA CANESCENS	GRAY HORSEBRUSH
TREE	ACGR	ACER GRANDIDENTATUM	BIGTOOTH MAPLE
	JUOS	JUNIPERUS OSTEOSPERMA	UTAH JUNIPER
	PIED	PINUS EDULIS	PINION PINE
	POAN	POPULUS ANGUSTIFOLIA	NARROWLEAF COTTONWOOD
	POTR	POPULUS TREMULOIDES	QUAKING ASPEN
	QUGA	QUERCUS GAMBELII	GAMBEL OAK
SUCCULENT	ECTR	ECHINOCEREUS TRIGLOCHIDIATUS	ECHINOCEREUS
	OPPO	OPUNTIA POLYACANTHA	PLAINS PRICKLYPEAR
	YUGL	YUCCA GLAUCA	SMALL SOAPWEED

UTAH ENDANGERED OR THREATENED SPECIES

NONE ENCOUNTERED

NOXIOUS WEEDS

FORB	CACH5	CARDARIA CHALEPENSIS	WHITETOP
FORB	CERE2	CENTAUREA REPENS	RUSSIAN KNAPWEED

PRIMARY SELENIUM INDICATORS

FORB	STPI2	STANLEYA PINNATA	DESERT PRINCESSPLUME

DESIGNATED WEEDS

GRASS	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
FORB	ASSP	ASCLEPIAS SPECIOSA	SHOWY MILKWEED
FORB	CACH5	CARDARIA CHALEPENSIS	WHITETOP
FORB	CERE2	CENTAUREA REPENS	RUSSIAN KNAPWEED
FORB	CHAL	CHENOPODIUM ALBUM	LAMBSQUARTERS GOOSEFOOT
FORB	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
FORB	DEPI	DESCURAINIA PINNATA	PINNATE TANSYMUSTARD
FORB	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
FORB	ERCI	ERODIUM CICUTARIUM	ALFILERIA
FORB	GRSQ	GRINDELIA SQUARROSA	CURLYCUP GUMWEED
FORB	HAGL	HALOGETON GLOMERATUS	HALOGETON
FORB	IVAX	IVA AXILLARIS	POVERTY SUMPWEED
FORB	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
FORB	LAOC	LAPPULA OCCIDENTALIS	ANNUAL STICKSEED
FORB	LEDED	LEPIDIUM DENSIFLORUM	PRAIRIE PEPPERWEED
FORB	MONU	MONOLEPIS NUTTALLIANA	NUTTALL MONOLEPIS
FORB	NECA2	NEPETA CATARIA	CATNIP
FORB	POAV	POLYGONUM AVICULARE	PROSTRATE KNOTWEED
FORB	SAKA	SALSOLA KALI	COMMON RUSSIANTHISTLE
FORB	SIAL	SISYMBRIUM ALTISSIMUM	TUMBLING HEDGEMUSTARD
FORB	TAOF	TARAXACUM OFFICINALE	COMMON DANDELION
FORB	THAR	THLASPI ARVENSE	FIELD PENNYCRESS
FORB	TRDU	TRAGOPOGON DUBIUS	YELLOW SALSIFY
FORB	URDI	URTICA DIOICA	STINGING NETTLE

VEGETATION SPECIES LIST

PRICE RIVER COAL COMPANY
HELPER, UTAH

RIPARIAN BOTTOM
1981

LIFE FORM	SPECIES CODE	SCIENTIFIC NAME	COMMON NAME
GRASS	AGDA	AGROPYRON DASYSTACHYUM	THICKSPIKE WHEATGRASS
	AGAL	AGROSTIS ALBA	REDTOP BENTGRASS
	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
	CACAC	CALAMAGROSTIS CANADENSIS CANADENSIS	BLUEJOINT REEDGRASS
	ELCA	ELYMUS CANADENSIS	CANADA WILDRYE
	HOJUJ	HORDEUM JUBATUM	FOXTAIL BARLEY
	ORHYH	ORYZOPSIS HYMENOIDES	INDIAN RICEGRASS
	POIN	POA INTERIOR	INLAND BLUEGRASS
	POPR	POA PRATENSIS	KENTUCKY BLUEGRASS
	STCO3	STIPA COMATA	NEEDLE-AND-THREAD
GRASS-LIKE	CARO4	CAREX ROSTRATA	BEAKED SEDGE
	CASP5	CAREX SPRENGELII	SEDGE
	ELPA8	ELEOCHARIS PALUSTRIS	SPIKERUSH
	JUFI	JUNCUS FILIFORMIS	THREAD RUSH
	JULO	JUNCUS LONGISTYLIS	LONGSTYLE RUSH
	JUNO	JUNCUS NODOSUS	JOUNTED RUSH
FORB	ACLA5	ACHILLEA LANULOSA	WESTERN YARROW
	ANTEN	ANTENNARIA SP.	PUSSYTOES
	APANP	APOCYNUM ANDROSAEMIFOIUM	SPREADING DOGBANE
	ARMI2	ARCTIUM MINUS	SMALLER BURDOCK
	ARLUL	ARTEMISIA LUDOVICIANA	LOUISIANA SAGEWORT
	ASSP	ASCLEPIAS SPECIOSA	SHOWY MILKWEED
	ASOF	ASPARAGUS OFFICINALIS	ASPERAGUS
	ASAD7	ASTER ADSCENDENS	LONGLEAF ASTER
	ASGL	ASTER GLAUCODES	BLUELEAF ASTER
	ASTRA	ASTRAGALUS SP.	MILKVETCH
	CHAL	CHENOPODIUM ALBUM	LAMBSQUARTERS GOOSEFOOT
	CIAR2	CIRSIUM ARVENSE	CANADA THISTLE
	CIPU	CIRSIUM PULCHELLUM	THISTLE
	CLCO	CLEMATIS COLUMBIANA	VIRGINSBOWER
	CLLI2	CLEMATIS LINGUSTICIFOLIA	WESTERN VIRGINSBOWER
	CLSE	CLEOME SERRULATA	BEE SPIDERFLOWER
	COUM5	COMANDRA UMBELLATA	COMMON BASTARDTOADFLAX
	COAR2	CONVOLVULUS ARVENSIS	FIELD BINDWEED
	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
	CYFR	CYSTOPTERIS FRAGILIS	BRITTLE BLADDERFERN
	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
	EPAL	EPILOBIUM ALPINUM	ALPINE WILLOWWEED
	EOLA	EQUISETUM LAEVIGAHLM	SMOOTH HORSETAIL
	EQVA	EQUISETUM VARIEGATUM	VARIEGATED HORSETAIL
	GLLE	GLYCYRRHIZA LEPIDOTA	AMERICAN LICORICE
	GRSQ	GRINDELIA SQUARROSA	CURLYCUP GUMWEED
	IVAX	IVA AXILLARIS	POVERTY SUMPWEED
	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
	LAOC	LAPPULA OCCIDENTALIS	ANNUAL STICKSEED
	LILE	LINUM LEWISI	LEWIS FLAX
	MEAL	MELILOTUS ALBA	WHITE SWEETCLOVER

	MEOF	MELILOTUS OFFICINALIS	YELLOW SWEETCLOVER
	MEAR	MENTHA ARVENSIS	FIELD MINT
	OXLI	OXYBAPHUS LINEARIS	NARROWLEAF UMBRELLAWORT
	PEEA	PENSTEMON EATONII	EATON PENSTEMON
	PLSC	PLAGIOBOTHRYS SCOULERI	SCOULER POPCORNFLOWER
	POAV	POLYGONUM AVICULARE	PROSTRATE KNOTWEED
	PSLA	PSORALEA LANCEOLATA	LEMON SCURFPEA
	RUCR	RUMEX CRISPUS	CURLEY DOCK
	SAKA	SALSOLA KALI	COMMON RUSSIANTHISTLE
	SIAL	SISYMBRIUM ALTISSIMUM	TUMBLING HEDGEMUSTARD
	SIMO2	SISYRINCHIUM MONTANUM	COLORADO BLUE-EYED-GRASS
	SMRAA	SMILACINA RACEMOSA	WILDSPIKENARD FALSESOLOMONSEAL
	SOCA2	SOLIDAGO CANADENSIS	CANADA GOLDENROD
	TYANG	TYPHA ANGUSTIFOLIA	CATTAIL
	VETH	VERBASCUM THAPSUS	FLANNEL MULLEIN
SUB-SHRUB	ARFR	ARTEMISIA FRIGIDA	FRINGED SAGEBRUSH
SHRUB	AMUTU	AMELANCHIER UTAHENSIS	UTAH SERVICEBERRY
	CHNAN	CHRYSOTHAMNUS NAUSEOSUS	RUBBER RABBITBRUSH
	CHVIV	CHRYSOTHAMNUS VISCIDIFLORUS	DOUGLAS RABBITBRUSH
	COSTS	CORNUS STOLONIFERA	REDOSIER DOGWOOD
	ELAN	ELAEAGNUS ANGUSTIFOLIA	RUSSIAN-OLIVE
	HODUE	HOLODISCUS DUMOSUS	BUSH OCEANSPRAY
	PRVIC	PRUNUS VIRGINIANA	COMMON CHOKECHERRY
	RHRA	RHUS RADICANS	POISON IVY
	RHTRT	RHUS TRILOBATA	SUMAC
	RICEC	RIBES CEREUM	WAX CURRENT
	ROWOL	ROSA WOODSII	WOODS ROSE
	RUIDS	RUBUS IDAEUS	RED RASPBERRY
	SALA2	SALIX LASIANDRA	PACIFIC WILLOW
	SAMEE	SALIX MELANOPSIS	DUSKY WILLOW
	SARIW	SALIX RIGIDA WATSONII	WATSON WILLOW
	SACAE	SAMBUCUS CANADENSIS	ELDER
	SYOC	SYMPHORICARPOS OCCIDENTALIS	WESTERN SNOWBERRY
	VIBUR	VIBURNUM SP.	VIBURNUM
TREE	ACGLG	ACER GLABRUM	ROCKY MOUNTAIN MAPLE
	ACGR	ACER GRANDIDENTATUM	BIGTOOTH MAPLE
	ACNEN	ACER NEGUNDO	BOXELDER
	BEGL	BETULA GLANDULOSA	BOG BIRCH
	CELEL	CERCOCARPUS LEDIFOLIUS	CURLLEAF MOUNTAIN MAHOGANY
	JUOS	JUNIPERUS OSTEOSPERMA	UTAH JUNIPER
	PIPO	PINUS PONDEROSA	PONDEROSA PINE
	POAN	POPULUS ANGUSTIFOLIA	NARROWLEAF COTTONWOOD
	PSMEM	PSEUDOTSUGA MENZIESII	DOUGLAS FIR
	QUGA	QUERCUS GAMBELII	GAMBEL OAK
	ULPA	ULMUS PARVIFOLIA	CHINESE ELM

UTAH ENDANGERED OR THREATENED SPECIES

NONE ENCOUNTERED

NOXIOUS WEEDS

FORB	CIAR2	CIRSIUM ARVENSE	CANADA THISTLE
FORB	COAR2	CONVOLVULUS ARVENSIS	FIELD BINDWEED

PRIMARY SELENIUM INDICATORS

NONE ENCOUNTERED

DESIGNATED WEEDS

GRASS	BRTET	BROMUS TECTORUM	CHEATGRASS BROME
GRASS	HOJUJ	HORDEUM JUBATUM	FOXTAIL BARLEY
FORB	ARMI2	ARCTIUM MINUS	SMALLER BURDOCK
FORB	ASSP	ASCLEPIAS SPECIOSA	SHOWY MILKWEED
FORB	ASOF	ASPARAGUS OFFICINALIS	ASPERAGUS
FORB	CHAL	CHENOPODIUM ALBUM	LAMBSQUARTERS GOOSEFOOT
FORB	CIAR2	CIRSIUM ARVENSE	CANADA THISTLE
FORB	CLSE	CLEOME SERRULATA	BEE SPIDERFLOWER
FORB	COAR2	CONVOLVULUS ARVENSIS	FIELD BINDWEED
FORB	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
FORB	DESO	DESCURAINIA SOPHIA	FLIXWEED TANSYMUSTARD
FORB	GLLE	GLYCYRRHIZA LEPIDOTA	AMERICAN LICORICE
FORB	GRSQ	GRINDELIA SQUARROSA	CURLYCUP GUMWEED
FORB	IVAX	IVA AXILLARIS	POVERTY SUMPWEED
FORB	KOSC	KOCHIA SCOPARIA	FIREWEED SUMMERCYPRESS
FORB	LAOC	LAPPULA OCCIDENTALIS	ANNUAL STICKSEED
FORB	POAV	POLYGONUM AVICULARE	PROSTRATE KNOTWEED
FORB	RUCR	RUMEX CRISPUS	CURLEY DOCK
FORB	SAKA	SALSOLA KALI	COMMON RUSSIANTHISTLE
FORB	SIAL	SISYMBRIUM ALTISSIMUM	TUMBLING HEDGEMUSTARD
FORB	SOCA2	SOLIDAGO CANADENSIS	CANADA GOLDENROD
FORB	VETH	VERBASCUM THAPSUS	FLANNEL MULLEIN
SHRUB	RHRA	RHUS RADICANS	POISON IVY

VEGETATION SPECIES LIST

PRICE RIVER COAL COMPANY
HELPER, UTAH

CONIFER
1981

LIFE FORM	SPECIES CODE	SCIENTIFIC NAME	COMMON NAME
GRASS	AGINI	AGROPYRON INTERMEDIUM	INTERMEDIATE WHEATGRASS
	AGTR	AGROPYRON TRACHYCAULUM	SLENDER WHEATGRASS
	AVSA	AVENA SATIVA	COMMON OAT
	BRCI	BROMUS CILIATUS	FRINGED BROME
	ELGLG	ELYMUS GLAUCUS	BLUE WILDRYE
	KOCR	KOELARIA CRISTATA	PRAIRIE JUNEGRASS
	LEKI5	LEUCOPOA KINGII	KING SPIKEFESCUE
	ORHYH	ORYZOPSIS HYMENOIDES	INDIAN RICEGRASS
	POAM	POA AMPLA	BIG BLUEGRASS
	POPA	POA PALUSTRIS	FOWL BLUEGRASS
	STCO3	STIPA COMATA	NEEDLE-AND-THREAD
FORB	ACLA5	ACHILLEA LANULOSA	WESTERN YARROW
	AGGL	AGOSERIS GLAUCA	PALE AGOSERIS
	ANSE	ANDROSACE SEPTENTRIONALIS	PYGMY ROCKJASMINE
	ANMI5	ANTENNARIA MICROPHYLLA	LITTLELEAF PUSSYTOES
	ANUM	ANTENNARIA UMBRINELLA	UMBER PUSSYTOES
	APANP	APOCYNUM ANDROSAEMIFOIUM	SPREADING DOGBANE
	ARMI3	ARABIS MICROPHYLLA	LITTLELEAF ROCKCRESS
	ARCO	ARNICA CORDIFOLIA	HEARTLEAF ARNICA
	ARLUL	ARTEMISIA LUDOVICIANA	LOUISIANA SAGEWORT
	ASAD7	ASTER ADSCENDENS	LONGLEAF ASTER
	ASGL	ASTER GLAUCOIDES	BLUELEAF ASTER
	ASPE	ASTER PEAELEGANS	NUTTALL ASTER
	ASAG5	ASTRAGALUS AGRESTIS	PURPLE MILKVETCH
	ASMI2	ASTRAGALUS MISER	WEEDY MILKVETCH
	CAFL3	CASTILLEJA FLAVA	YELLOW INDIAN PAINTBRUSH
	CALI	CASTILLEJA LINARIAEFOLIA	WYOMING INDIANPAINTBRUSH
	CASU	CASTILLEJA SULPHUREA	SULPHUR PAINTED-CUP
	CEAR	CERASTIUM ARVENSE	STARRY CERASTIUM
	CIPU	CIRSIUM PULCHELLUM	THISTLE
	CLLI2	CLEMATIS LINGUSTICIFOLIA	WESTERN VIRGINSBOWER
	CRHU	CRYPTANTHA HUMILIS	CRYPTANTHA
	CYLO	CYMOPTERUS LONGIPES	SPRING PARSLEY
	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
	CYFR	CYSTOPTERIS FRAGILIS	BRITTLE BLADDERFERN
	DENU	DELPHINUM NUTTALLIANUM	NUTTALL LARKSPUR
	EPAN	EPILOBIUM ANGUSTIFOLIUM	FIREWEED WILLOWHERB
	EREA	ERIGERON EATONII	EATON FLEABANE
	ERCH	ERIOGONUM CHRYSOCEPHALUM	GOLDBALL ERIOGONUM
	ERFL2	ERIOGONUM FLAVUM	YELLOW ERIOGONUM
	ERHE5	ERIOGONUM HERACLEOIDES	WYETH WILD BUCKWHEAT
	ERAS	ERYSIMUM ASPERUM	PLAINS WALLFLOWER
	FRVI	FRAGARIA VIRGINIANA	VIRGINIA STRAWBERRY
	GAAPA	GALIUM APARINE	CATCHWEED BEDSTRAW
	GEVIV	GERANIUM VISCOSSIMUM	STICKY GERANIUM
	GIAG5	GILIA AGGREGATA	SKYROCKET GILIA
	HYAC	HYMENOXYS ACAULIS	STEMLESS HYMENOXYS
	HYRI	HYMENOXYS RICHARDSONII	PINGUE HYMENOXYS

	LIIN	LITHOSPERUM INCISUM	NARROWLEAF GROMWELL
	MACA	MACHAERANTHERA CANESCENS	HOARY ASTER
	MELU	MEDICAGO LUPULINA	BLACK MEDIC
	MEVI	MERTENSIA VIRIDIS	GREENLEAF BLUEBELLS
	ONAC	ONOPORDUM ACANTHIUM	SCOTCH COTTONTHISTLE
	OSCH	OSMORHIZA CHILENSIS	SPREADING SWEETROOT
	OXLA	OXYTROPIS LAMBERTII	LAMBERT LOCOWEED
	PEAN2	PENSTEMON ANGUSTIFOLIA	NARROWLEAF PENSTEMON
	PEEA	PENSTEMON EATONII	EATON PENSTEMON
	PEHU	PENSTEMON HUMILIS	LOW PENSTEMON
	PEWA2	PENSTEMON WATSONII	WATSON PENSTEMON
	PHAU	PHLOX AUSTROMONTANA	DESERT PHLOX
	PHLO	PHLOX LONGIFOLIA	LONGLEAF PHLOX
	PHAC2	PHYSARIA ACUTIFOLIA	COMMON TWINPOD
	POPE4	POTENTILLA PENNSYLVANICA	PENNSYLVANIA CONQUEFOIL
	SAIB	SALSOLA IBERICA	SALTWORT
	SEAM6	SENECIO AMBROSIOIDES	GROUNDSEL
	SEER	SENECIO EREMOPHILUS	DESERT GROUNDSEL
	SEMU2	SENECIO MULTILOBATUS	LOBELEAF GROUNDSEL
	SIME	SILENE MENZIESII	MENZIES SILENE
	SMRAA	SMILACINA RACEMOSA	WILDSPIKENARD FALSESOLOMONSEAL
	SOSP3	SOLIDAGO SPARSIFLORA	GOLDENROD
	SOAR	SONCHUS ARVENSIS	FIELD SOWTHISTLE
	TAOF	TARAXACUM OFFICINALE	COMMON DANDELION
	THFE	THALICTRUM FENDLERI	FENDLER MEADOWRUE
	TRDU	TRAGOPOGON DUBIUS	YELLOW SALSIFY
	URDI	URTICA DIOICA	STINGING NETTLE
	VIAMM	VICIA AMERICANA	AMERICAN VETCH
SUB-SHRUB	ARUV	ARCTOSTAPHYLOS UVA-URSI	BEARBERRY
	ARFR	ARTEMISIA FRIGIDA	FRINGED SAGEBRUSH
	CELAL	CERATOIDES LANATA	COMMON WINTERFAT
	PAMY	PACHISTIMA MYRSINITA	MYRTLE PACHISTIMA
	XASA	XANTHOCEPHALUM SAROTHRAE	BROOM SNAKEWEED
SHRUB	ARAR	ARTEMISIA ARBUSCULA	LOW SAGEBRUSH
	BERE	BERBERIS REPENS	CREEPING BARBERRY
	CEMOM	CERCOCARPUS MONTANUS	TRUE MOUNTAIN MAHOGANY
	HODU5	HOLODISCUS DUMOSUS	BUSH OCEANSPRAY
	JUCOS	JUNIPERUS COMMUNIS	MOUNTAIN COMMON JUNIPER
	JUSC	JUNIPERUS SCOPULORUM	ROCKY MOUNTAIN JUNIPER
	RIBES	RIBES SP.	CURRANT
	ROWOU	ROSA WOODSII	WOODS ROSE
	RUICS	RUBUS IDAEUS	RED RASPBERRY
	SAME5	SALIX MELANOPSIS	DUSKY WILLOW
	SYOC	SYMPHORICARPOS OCCIDENTALIS	WESTERN SNOWBERRY
TREE	ABCO	ABIES CONCOLOR	WHITE FIR
	ABLA	ABIES LASIOCARPA	SUBALPINE FIR
	ACGLE	ACER GLABRUM	ROCKY MOUNTAIN MAPLE
	ACGR	ACER GRANDIDENTATUM	BIGTOOTH MAPLE
	CELEL	CERCOCARPUS LEDIFOLIUS	CURLLEAF MOUNTAIN MAHOGANY
	JUOS	JUNIPERUS OSTEOSPERMA	UTAH JUNIPER
	PIED	PINUS EDULIS	PINION PINE
	PIPO	PINUS PONDEROSA	PONDEROSA PINE
	POAN	POPULUS ANGUSTIFOLIA	NARROWLEAF COTTONWOOD
	POTR	POPULUS TREMULOIDES	QUAKING ASPEN
	PSME	PSEUDOTSUGA MENZIESII	DOUGLAS FIR
	QUGA	QUERCUS GAMBELII	GAMBEL OAK

UTAH EN[illegible]SERED OR THREATENED SPECIES

NONE ENCOUNTERED

NOXIOUS WEEDS

FORB	ONAC	ONOPORDUM ACANTHIUM	SCOTCH COTTONTHISTLE

PRIMARY SELENIUM INDICATORS

NONE ENCOUNTERED

DESIGNATED WEEDS

FORB	AGGL	AGOSERIS GLAUCA	PALE AGOSERIS
FORB	CEAR	CERASTIUM ARVENSE	STARRY CERASTIUM
FORB	CYOF	CYNOGLOSSUM OFFICINALE	COMMON HOUNDSTONGUE
FORB	GAAPA	GALIUM APARINE	CATCHWEED BEDSTRAW
FORB	MELU	MEDICAGO LUPULINA	BLACK MEDIC
FORB	ONAC	ONOPORDUM ACANTHIUM	SCOTCH COTTONTHISTLE
FORB	OSCH	OSMORHIZA CHILENSIS	SPREADING SWEETROOT
FORB	SOAR	SONCHUS ARVENSIS	FIELD SOWTHISTLE
FORB	TAOF	TARAXACUM OFFICINALE	COMMON DANDELION
FORB	TROU	TRAGOPOGON DUBIUS	YELLOW SALSIFY
FORB	URDI	URTICA DIOICA	STINGING NETTLE