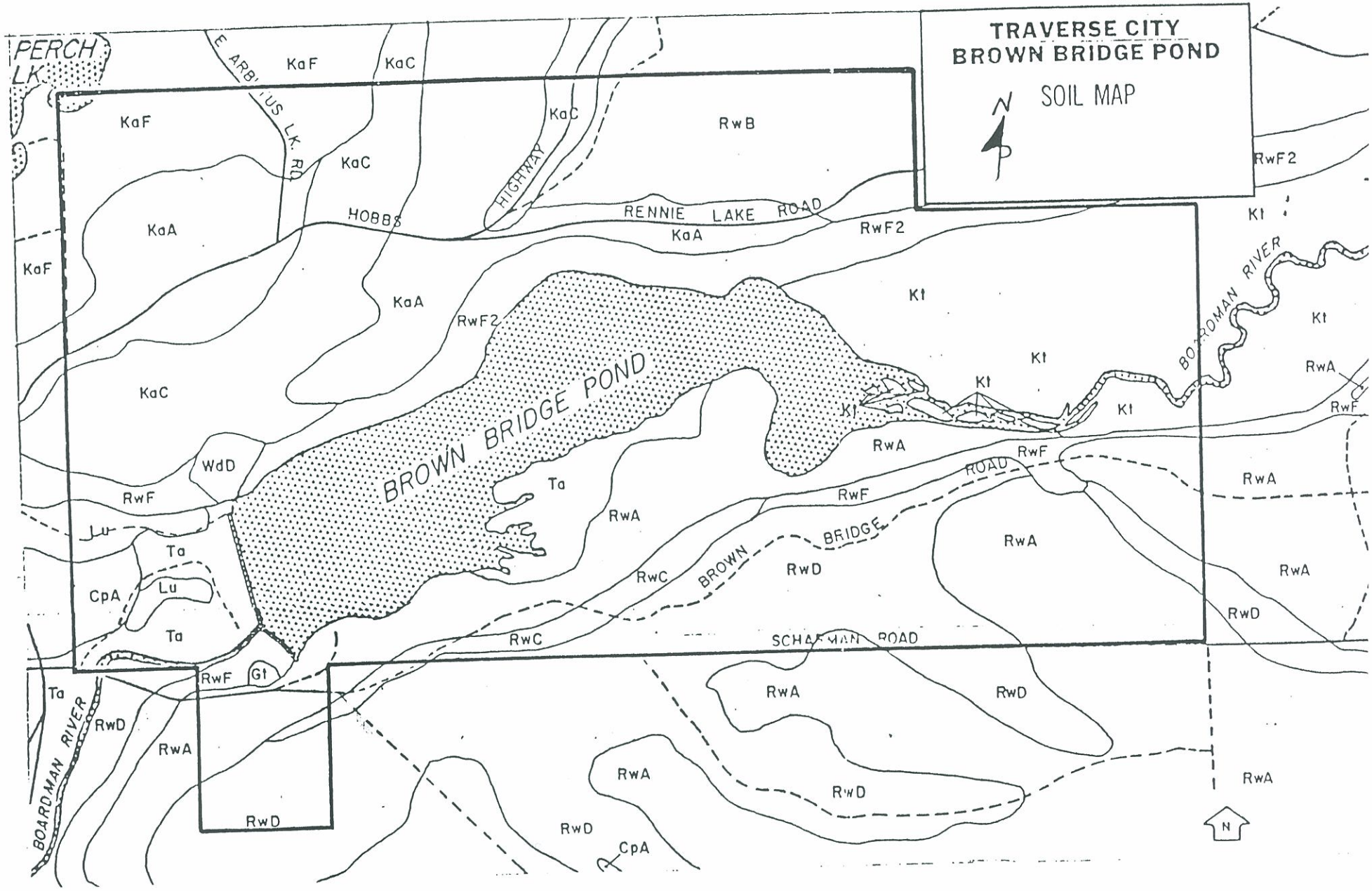
APPENDIX "A"

SOILS (MAP)

BROWN BRIDGE QUIET AREA
SOILS MAP
1966



TRAVERSE COUNTY, MICHIGAN

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, E, or F, shows the slope. Some symbols without a slope letter are those of nearly level soils or land types, but some are for soils or land types that have a considerable range in slope. A final number, 2 or 3, in the symbol shows that the soil is eroded or severely eroded.

SYMBOL	NAME
AeA	Alpena–East Lake gravelly loamy sands, 0 to 2 percent slopes
AeB	Alpena–East Lake gravelly loamy sands, 2 to 6 percent slopes
AeC	Alpena–East Lake gravelly loamy sands, 6 to 12 percent slopes
AeD	Alpena–East Lake gravelly loamy sands, 12 to 18 percent slopes
AeE	Alpena–East Lake gravelly loamy sands, 25 to 35 percent slopes
AsA	AuGres–Saugatuck sands, 0 to 2 percent slopes
AsB	AuGres–Saugatuck sands, 2 to 6 percent slopes
CnA	Coventry–Newaygo loams, 0 to 2 percent slopes
CnB	Coventry–Newaygo loams, 2 to 6 percent slopes
CnC	Coventry–Newaygo loams, 6 to 12 percent slopes
CoA	Croswell loamy sands, 0 to 2 percent slopes, overwash
CoB	Croswell loamy sands, 2 to 6 percent slopes, overwash
CpA	Croswell loamy sands, 0 to 2 percent slopes
CpA2	Croswell loamy sands, 0 to 2 percent slopes, moderately eroded
CpB	Croswell loamy sands, 2 to 6 percent slopes
CpB2	Croswell loamy sands, 2 to 6 percent slopes, moderately eroded
CrA	Croswell–Rubicon sands, 0 to 2 percent slopes
CrA2	Croswell–Rubicon sands, 0 to 2 percent slopes, moderately eroded
CrB	Croswell–Rubicon sands, 2 to 6 percent slopes
EmA	East Lake–Mancelona loamy sands, 0 to 2 percent slopes
EmB	East Lake–Mancelona loamy sands, 2 to 6 percent slopes
EmC	East Lake–Mancelona loamy sands, 6 to 12 percent slopes
EmC2	East Lake–Mancelona loamy sands, 6 to 12 percent slopes, moderately eroded
EmD	East Lake–Mancelona loamy sands, 12 to 18 percent slopes
EmE	East Lake–Mancelona loamy sands, 18 to 25 percent slopes
EmE2	East Lake–Mancelona loamy sands, 18 to 25 percent slopes, moderately eroded
EmF	East Lake–Mancelona loamy sands, 25 to 35 percent slopes
ErA	Eastport–Roscommon sands, 0 to 2 percent slopes
Es	Edwards muck
ExA	Emmet gravelly sandy loam, 0 to 2 percent slopes
ExB	Emmet gravelly sandy loam, 2 to 6 percent slopes
ExC	Emmet gravelly sandy loam, 6 to 12 percent slopes
ExD	Emmet gravelly sandy loam, 12 to 18 percent slopes
ExD2	Emmet gravelly sandy loam, 12 to 18 percent slopes, moderately eroded
ExE	Emmet gravelly sandy loam, 18 to 25 percent slopes
ExE2	Emmet gravelly sandy loam, 18 to 25 percent slopes, moderately eroded
ExF	Emmet gravelly sandy loam, 25 to 45 percent slopes
ExF2	Emmet gravelly sandy loam, 25 to 45 percent slopes, moderately eroded
EyA	Emmet sandy loam, 0 to 2 percent slopes
EyB	Emmet sandy loam, 2 to 6 percent slopes
EyB2	Emmet sandy loam, 2 to 6 percent slopes, moderately eroded
EyC	Emmet sandy loam, 6 to 12 percent slopes
EyC2	Emmet sandy loam, 6 to 12 percent slopes, moderately eroded
EyD	Emmet sandy loam, 12 to 18 percent slopes
EyD2	Emmet sandy loam, 12 to 18 percent slopes, moderately eroded
EyE	Emmet sandy loam, 18 to 25 percent slopes
EyE2	Emmet sandy loam, 18 to 25 percent slopes, moderately eroded
EyE3	Emmet sandy loam, 18 to 25 percent slopes, severely eroded
EyF	Emmet sandy loam, 25 to 45 percent slopes
EyF2	Emmet sandy loam, 25 to 45 percent slopes, moderately eroded
EyF3	Emmet sandy loam, 25 to 45 percent slopes, severely eroded
Fm	Fresh water marsh
GrA	Gladwin–Richter gravelly sandy loams, 0 to 2 percent slopes
GrB	Gladwin–Richter gravelly sandy loams, 2 to 6 percent slopes
GrC	Gladwin–Richter gravelly sandy loams, 6 to 12 percent slopes
GsE	Gravelly land, moderately steep
GsF	Gravelly land, steep
Gt	Gravel pits
GuB	Grayling sand, 0 to 6 percent slopes
Gw	Greenwood peat
GxA	Guelph–Nester loams, 0 to 2 percent slopes
GxB	Guelph–Nester loams, 2 to 6 percent slopes
GxB2	Guelph–Nester loams, 2 to 6 percent slopes, moderately eroded
GxC2	Guelph–Nester loams, 6 to 12 percent slopes, moderately eroded
GxD	Guelph–Nester loams, 12 to 18 percent slopes
GxD2	Guelph–Nester loams, 12 to 18 percent slopes, moderately eroded
GxE2	Guelph–Nester loams, 18 to 25 percent slopes, moderately eroded
GxF2	Guelph–Nester loams, 25 to 35 percent slopes, moderately eroded
Gy	Gullied land
Ho	Houghton muck
IaA	Ingalls–Alpena gravelly loamy sands, 0 to 2 percent slopes
IaB	Ingalls–Alpena gravelly loamy sands, 2 to 6 percent slopes
IIB	Iosco loamy sand, 2 to 6 percent slopes
IIC	Iosco loamy sand, 6 to 12 percent slopes

SYMBOL	NAME
MmC	Menominee-McBride complex, 6 to 12 percent slopes
MmC2	Menominee-McBride complex, 6 to 12 percent slopes, moderately eroded
MmD	Menominee-McBride complex, 12 to 18 percent slopes
MmD2	Menominee-McBride complex, 12 to 18 percent slopes, moderately eroded
MmE	Menominee-McBride complex, 18 to 25 percent slopes
MmE2	Menominee-McBride complex, 18 to 25 percent slopes, moderately eroded
MmF	Menominee-McBride complex, 25 to 45 percent slopes
MoA	Montcalm-Kalkaska loamy sands, 0 to 2 percent slopes
MoB	Montcalm-Kalkaska loamy sands, 2 to 6 percent slopes
MoB2	Montcalm-Kalkaska loamy sands, 2 to 6 percent slopes, moderately eroded
MoC	Montcalm-Kalkaska loamy sands, 6 to 12 percent slopes
MoC2	Montcalm-Kalkaska loamy sands, 6 to 12 percent slopes, moderately eroded
MoD	Montcalm-Kalkaska loamy sands, 12 to 18 percent slopes
MoD2	Montcalm-Kalkaska loamy sands, 12 to 18 percent slopes, moderately eroded
MoE	Montcalm-Kalkaska loamy sands, 18 to 25 percent slopes
MoE2	Montcalm-Kalkaska loamy sands, 18 to 25 percent slopes, moderately eroded
MoF	Montcalm-Kalkaska loamy sands, 25 to 45 percent slopes
MoF2	Montcalm-Kalkaska loamy sands, 25 to 45 percent slopes, moderately eroded
RcA	Richter loams, 0 to 2 percent slopes, overwash
RcB	Richter loams, 2 to 6 percent slopes, overwash
RhA	Richter loams, 0 to 2 percent slopes
RhB	Richter loams, 2 to 6 percent slopes
RpA	Richter, Tonkey, and Pinconning loams, 0 to 2 percent slopes, overwash
RrA	Richter, Tonkey, and Pinconning loams, 0 to 2 percent slopes
RrB	Richter, Tonkey, and Pinconning loams, 2 to 6 percent slopes
RrC	Richter, Tonkey, and Pinconning loams, 6 to 12 percent slopes
Rs	Rifle peat
Rt	Roscommon mucky loamy sand, overwash
Ru	Roscommon mucky loamy sand
Rv	Roscommon sand
RwA	Rubicon sand, 0 to 2 percent slopes
RwA2	Rubicon sand, 0 to 2 percent slopes, moderately eroded
RwB	Rubicon sand, 2 to 6 percent slopes,
RwB2	Rubicon sand, 2 to 6 percent slopes, moderately eroded
RwC	Rubicon sand, 6 to 12 percent slopes
RwC2	Rubicon sand, 6 to 12 percent slopes, moderately eroded
RwD	Rubicon sand, 12 to 18 percent slopes
RwD2	Rubicon sand, 12 to 18 percent slopes, moderately eroded
RwE	Rubicon sand, 18 to 25 percent slopes
RwE2	Rubicon sand, 18 to 25 percent slopes, moderately eroded
RwF	Rubicon sand, 25 to 45 percent slopes
RwF2	Rubicon sand, 25 to 45 percent slopes, moderately eroded
RxB	Rubicon-Menominee loamy sands, 2 to 6 percent slopes
RxC	Rubicon-Menominee loamy sands, 6 to 12 percent slopes
RxD	Rubicon-Menominee loamy sands, 12 to 18 percent slopes
SrB	Sanilac-Richter loams, 0 to 6 percent slopes
Ta	Tawas-Roscommon complex
Tm	Tonkey mucky sandy loam
Tn	Tonkey sandy loam, overwash
To	Tonkey sandy loam
Tp	Tonkey-Hettinger-Pickford loams, overwash
Tr	Tonkey-Hettinger-Pickford loams
UbA	Ubly sandy loam, 0 to 2 percent slopes
UbB	Ubly sandy loam, 2 to 6 percent slopes
UbC	Ubly sandy loam, 6 to 12 percent slopes
UbC2	Ubly sandy loam, 6 to 12 percent slopes, moderately eroded
UbD	Ubly sandy loam, 12 to 18 percent slopes
UbE	Ubly sandy loam, 18 to 25 percent slopes
UbF	Ubly sandy loam, 25 to 35 percent slopes
UmA	Ubly-McBride sandy loams, 0 to 2 percent slopes
UmB	Ubly-McBride sandy loams, 2 to 6 percent slopes
UmC	Ubly-McBride sandy loams, 6 to 12 percent slopes
UmD	Ubly-McBride sandy loams, 12 to 18 percent slopes
UnA	Ubly-Nester complex, 0 to 2 percent slopes
UnB	Ubly-Nester complex, 2 to 6 percent slopes
UnC	Ubly-Nester complex, 6 to 12 percent slopes
UnD	Ubly-Nester complex, 12 to 18 percent slopes
UnD2	Ubly-Nester complex, 12 to 18 percent slopes, moderately eroded
UnE	Ubly-Nester complex, 18 to 25 percent slopes
UnE2	Ubly-Nester complex, 18 to 25 percent slopes, moderately eroded
UnF	Ubly-Nester complex, 25 to 35 percent slopes
UnF2	Ubly-Nester complex, 25 to 35 percent slopes, moderately eroded
WdC	Wind eroded land, sloping
WdD	Wind eroded land, strongly sloping

Soil map constructed 1963 by Cartographic Division, Soil Conservation Service, USDA, from 1952 aerial photographs. Controlled mosaic based on Michigan plane coordinate system, central zone, transverse Mercator projection. 1927 North American datum.

APPENDIX "B"

PLANT SPECIES LIST

SITE: BROWN BRIDGE QUIET AREA: UPLANDS
CO: GRAND TRAVERSE
DATE: REVISED MARCH, 1992
BY: GARY A. REESE
NAME: MIDWEST BIOSURVEYS

83	NATIVE TAXA
98	W/Adventives
4.54	NATIVE QUALITY
3.85	W/Adventives
41.38	NATIVE INDEX
38.08	W/Adventives
1.7	NATIVE WETNESS
1.9	W/Adventives
AVG:	FAC. UPLAND (+)

CofC	SCIENTIFIC NAME	CofW	WETNESS	COMMON NAME
3	Abies balsamea	-3	FACW	Fir, Balsam
	Common in Mesic Northern Forest			
	In Dry-Mesic Northern Forest			
1	Acer rubrum	0	FAC	Maple, Red
	In Dry Northern Forest and abundant in Dry-Mesic Northern Forest			
5	Acer saccharum	3	FACU	Maple, Sugar
	Dominant in Mesic Northern Forest and Dry-Mesic Northern Forest			
0	AGROPYRON REPENS	3	FACU	Quack Grass
	Reese 2745 (7-5-91 #1-53) Occasional in Mesic Northern Forest			
5	Agrostis perennans	1	FAC-	Autumn or Upland Bent
	Reese 2785 (7-18/19-91 #12) Localized occasional in Mesic Northern Forest			
	Agrostis sp.			
	Reese 2799 (5-30-91 #3) Common in Dry-Mesic Northern Forest			
4	Amelanchier arborea	3	FACU	Serviceberry
	In Mesic Northern Forest and dominant in Dry-Mesic Northern Forest			
3	Antennaria plantaginifolia	5	UPL	Pussy Toes
	Rare in Dry-Mesic Northern Forest			
5	Aquilegia canadensis	1	FAC-	Columbine, Wild
	Occasional in Mesic Northern Forest			
6	Arabis drummondii	3	FACU	Cress, Rock
	Rare in Dry-Mesic Northern Forest			
5	Aralia nudicaulis	3	FACU	Sarsaparilla, Wild
	Local in Mesic Northern Forest			
8	Aralia racemosa	5	UPL	Spikenard
	In Mesic Northern Forest			
5	Arisaema triphyllum	-2	FACW-	Jack-in-the-pulpit, Swamp
4	Aster macrophyllus	5	UPL	Aster
	In Mesic Northern Forest and locally common to abundant in Dry-Mesic Northern Forest			

Aster sp.
Reese 2610 (8-19-91 #3) Occasional in old field
Reese 2611 (8-20-91 #5) Roadside

0	BERTEROA INCANA	5	UPL	Alyssum, Hoary
	Locally weedy in Dry-Mesic Northern Forest			
2	Betula papyrifera	2	FACU+	Birch, Paper
	Common in Mesic Northern Forest			
5	Botrychium virginianum	3	FACU	Fern, Rattlesnake
	In Mesic Northern Forest			
0	BROMUS INERMIS	5	UPL	Brome, Smooth
	Reese 2763 (7-18/19-91 #27) Mesic Northern Forest			
4	Carex pensylvanica	5	UPL	Sedge, Pennsylvania
	In Dry Northern Forest and dominant in Dry-Mesic Northern Forest			
	Reese 2778 (7-18/19-91 #5) Dominant in Mesic Northern Forest			
	Reese 2802 (5-30-91 #17) Localized rare in Dry-Mesic Northern Forest			
6	Carpinus caroliniana	0	FAC	Hornbeam
	Dominant in Dry-Mesic Northern Forest			
0	CENTAUREA MACULOSA	5	UPL	Knapweed, Spotted
	Locally weedy in Dry-Mesic Northern Forest			
8	Cercis canadensis	3	FACU	Redbud
	In Mesic Northern Forest			
8	Chimaphila umbellata	5	upl	Prince's Pine
	Rare in Dry-Mesic Northern Forest			
4	Circaea alpina	-3	FACW	Nightshade, Small Enchanter's
	Occasional (?) in Mesic Northern Forest			
6	Comptonia peregrina	5	UPL	Sweetfern
	In Dry Northern Forest			
5	Coptis trifoliata groenlandica	-3	FACW	Goldthread
	Reese 2780 & 2781 (7-18/19-91 #7) Local in Mesic Northern Forest			
5	Corallorhiza maculata	4	FACU-	Coral-root, Spotted
	Rare in Mesic Northern Forest and localized occasional in Dry-Mesic Northern Forest			
6	Corallorhiza striata	4	FACU-	Coral-root, Striped
	Rare in Mesic Northern Forest			
5	Cypripedium acaule	-3	FACW	Moccasin Flower
	In Mesic Northern Forest and rare(?) in Dry-Mesic Northern Forest			
5	Cystopteris bulbifera	-2	FACW-	Fern, Bulblet
	In Mesic Northern Forest and Dry-Mesic Northern Forest			
0	DACTYLIS GLOMERATA	3	FACU	Orchard Grass
	Weedy in Mesic Northern Forest and localized occasional in Dry-Mesic Northern Forest			
4	Danthonia spicata	5	UPL	Poverty Grass
	Reese 2809 (5-30-91) Dominant in Mesic Northern Forest			
0	DAUCUS CAROTA	5	UPL	Carrot, Wild
	Weedy in Mesic Northern Forest			
0	EPIPACTIS HELLEBORINE	5	UPL	Helleborine
	Reese 2625 (7-18/19-91 #43) Rare in Mesic Northern Forest			

0	Equisetum arvense	0	FAC	Horsetail, Field
10	Equisetum palustre	-3	FACW	Horsetail, Marsh
	Reese #2811 (5-30-91 #135) Mesic Northern Forest			
5	Equisetum sylvaticum	-3	FACW	Horsetail, Wood
	Reese 2777 (7-18/19-91 #4) Locally abundant in Mesic Northern Forest			
6	Fagus grandifolia	3	FACU	Beech
	Rare to locally dominant in Mesic Northern Forest			
2	Fragaria virginiana	1	FAC-	Strawberry, Virginia
	In Mesic Northern Forest and rare in Dry-Mesic Northern Forest			
5	Fraxinus americana	3	FACU	Ash, White
	In Mesic Northern Forest			
5	Gaultheria procumbens	3	FACU	Teaberry
	In Mesic Northern Forest and localized occasional to common in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
7	Gaylussacia baccata	3	FACU	Huckleberry, Black
	Common in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
	Glyceria (striata?)			
	In Mesic Northern Forest			
7	Goodyera pubescens	0	FAC	Rattlesnake-plantain
	Reese 2779 (7-18/19-91 #6) Rare in Mesic Northern Forest			
5	Hamamelis virginiana	3	FACU	Witch-hazel
	Local in Mesic Northern Forest and locally common in Dry-Mesic Northern Forest			
6	Hepatica americana	5	UPL	Hepatica
	In Mesic Northern Forest			
0	HYPERICUM PERFORATUM	5	UPL	St. John's-wort, Common
	Weedy and local in Dry-Mesic Northern Forest			
4	Krigia virginica	5	UPL	Dandelion, Dwarf
	Rare in Mesic Northern Forest			
5	Lonicera canadensis	3	FACU	Honeysuckle, American Fly
	In Dry-Mesic Northern Forest			
	Common in Mesic Northern Forest			
4	Lycopodium clavatum	0	FAC	Clubmoss, Staghorn
	In Mesic Northern Forest			
	Reese 2738 (5-30-91 #125) Locally common in Mesic Northern Forest			
5	Lycopodium complanatum	2	FACU+	Running-pine, Northern
	Occasional in Dry Northern Forest			
	Reese 2648 (5-30-91 #13) Localized rare to occasional in Dry-Mesic Northern Forest			
	Reese 2775 (7-18/19-91 #22) Occasional in Dry-Mesic Northern Forest			
5	Lycopodium obscurum	3	FACU	Ground-pine, Flat-branched
	Reese 2739 (5-30-91 #129) Occasional in Mesic Northern Forest			
4	Maianthemum canadense	0	FAC	Wild-lily-of-the-valley
	Common in Mesic Northern Forest and Dry-Mesic Northern Forest			
6	Melampyrum lineare	1	FAC-	Cow Wheat
	In Dry Northern Forest			

0	MELILOTUS ALBA	3	FACU	Sweet Clover, White
	Weedy in Mesic Northern Forest and locally weedy in Dry-Mesic Northern Forest			
0	MELILOTUS OFFICINALIS	3	FACU	Sweet Clover, Yellow
	Locally weedy in Dry-Mesic Northern Forest			
3	Mentha arvensis	-3	FACW	Mint, Wild
0	MENTHA X PIPERITA	-5	OBL	Peppermint
	Reese 2784 (7-18/19-91 #11) Occasional in Mesic Northern Forest			
5	Mitchella repens	2	FACU+	Berry, Partridge
	In Dry-Mesic Northern Forest and occasional in Mesic Northern Forest			
5	Monotropa uniflora	3	FACU	Indian Pipe
	Rare in Dry-Mesic Northern Forest			
2	Onoclea sensibilis	-3	FACW	Fern, Sensitive
	In Mesic Northern Forest			
6	Oryzopsis asperifolia	5	UPL	Rice-grass
	Reese 2737 (5-30-91 #119) Dominant in Mesic Northern Forest			
	Reese 2801 (5-30-91 #9) Rare in Dry-Mesic Northern Forest			
8	Oryzopsis racemosa	5	UPL	Rice-grass
	Reese 2776 (7-18/19-91 #2) Common in Dry-Mesic Northern Forest			
5	Ostrya virginiana	4	FACU-	Ironwood
	Occasional in Mesic Northern Forest			
3	Panicum clandestinum	-3	FACW	Panic Grass
	Reese 2774 (7-18/19-91 #21) Rare in Dry-Mesic Northern Forest			
	Panicum sp.			
	Reese 2615 (5-30-91 #27) Locally rare in Mesic Northern Forest			
5	Parthenocissus quinquefolia	1	FAC-	Creeper, Virginia
	In Mesic Northern Forest			
10	Pedicularis canadensis	2	FACU+	Betony, Wood
	In Dry-Mesic Northern Forest and locally abundant in Mesic Northern Forest			
0	PHLEUM PRATENSE	3	FACU	Timothy
	Weedy in Mesic Northern Forest			
3	Picea glauca	3	FACU	Spruce, White
	In Mesic Northern Forest and in Dry-Mesic Northern Forest			
5	Pinus banksiana	3	facu	Pine, Jack
	Dominant in Dry Northern Forest and localized occasional in Dry-Mesic Northern Forest			
6	Pinus resinosa	3	FACU	Pine, Red
	Locally common in Mesic Northern Forest and dominant in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
3	Pinus strobus	3	FACU	Pine, White
	Dominant in Mesic Northern Forest and Dry-Mesic Northern Forest			
	In Dry Northern Forest			
0	POA PRATENSIS	1	FAC-	Bluegrass, Kentucky
	Locally common in Mesic Northern Forest			
4	Populus grandidentata	3	FACU	Aspen, Largetooth
	In Dry-Mesic Northern Forest and abundant in Mesic Northern Forest			
	In Dry Northern Forest			

1	Populus tremuloides	0	FAC	Aspen, Quaking
	Occasional to Dominant in Mesic Northern Forest and common in Dry-Mesic Northern Forest			
5	Prenanthes alba	3	FACU	Lettuce, White
	Reese 2746 (7-5-91 #1-55) Rare in Mesic Northern Forest			
0	PRUNELLA VULGARIS	0	FAC	Heal-all
	Reese 2764 (7-18/19-91 #28) Mesic Northern Forest			
4	Prunus serotina	3	FACU	Cherry, Wild Black
	In Mesic Northern Forest and common in Dry-Mesic Northern Forest			
2	Prunus virginiana	1	FAC-	Cherry, Choke
	Common in Mesic Northern Forest			
0	Pteridium aquilinum	3	FACU	Fern, Bracken
	Dominant in Mesic Northern Forest and Dry-Mesic Northern Forest			
	In Dry Northern Forest			
5	Quercus alba	3	FACU	Oak, White
	Dominant in Dry-Mesic Northern Forest			
5	Quercus rubra	3	FACU	Oak, Red
	Occasional in Mesic Northern Forest			
6	Quercus velutina	5	UPL	Oak, Black
	Common to abundant in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
1	Rubus allegheniensis	2	FACU+	Blackberry, Common
	Local in Mesic Northern Forest			
1	Rudbeckia hirta	3	FACU	Black-eyed Susan
	In Mesic Northern Forest			
3	Scirpus atrovirens	-5	OBL	Bulrush, Green
	Reese 2765 (7-18/19-91 #29) Mesic Northern Forest			
5	Smilacina racemosa	3	FACU	Spikenard, False
	Occasional to rare in Mesic Northern Forest and common in Dry-Mesic Northern Forest			
3	Solidago rugosa	-1	FAC+	Golden-rod, Wrinkled
5	Streptopus roseus	0	FAC	Twisted-stalk
	Common in Mesic Northern Forest and Dry-Mesic Northern Forest			
4	Thuja occidentalis	-3	FACW	Cedar, Northern White
	In Mesic Northern Forest			
5	Tilia americana	3	FACU	Basswood
	In Mesic Northern Forest			
2	Toxicodendron radicans	-1	FAC+	Ivy, Poison
	Local in Mesic Northern Forest			
5	Trientalis borealis	-1	FAC+	Starflower, American
	Common in Mesic Northern Forest and localized occasional in Dry-Mesic Northern Forest			
0	TRIFOLIUM PRATENSE	2	FACU+	Clover, Red
	Reese #2761 (7-18/19-91 #25) Weedy in Mesic Northern Forest			
5	Tsuga canadensis	3	FACU	Hemlock, Eastern
	Occasional in Mesic Northern Forest			
2	Ulmus rubra	0	FAC	Elm, Slippery
	In Mesic Northern Forest			

4	Vaccinium angustifolium	3	FACU	Blueberry, Lowbush
	Dominant in Mesic Northern Forest			
	In Dry Northern Forest			
	Reese 2800 (5-30-91 #5) Dominant in Dry-Mesic Northern Forest			
	Vaccinium (caespitosum?)			
	In Dry Northern Forest			
6	Viburnum acerifolium	5	UPL	Viburnum, Mapleleaf
	Rare in Dry-Mesic Northern Forest			
4	Viola pubescens	4	FACU-	Violet, Yellow
	Reese 2810 (5-30-91 #133) Localized in Mesic Northern Forest			
3	Vitis riparia	-2	FACW-	Grape, River-bank
	Reese 2762 (7-18/19-91 #26) Mesic Northern Forest			

Undetermined specimens:
Reese 2614 (5-30-91 #21) Rare in Mesic Northern Forest

SITE: BROWN BRIDGE QUIET AREA: WETLANDS
CO: GRAND TRAVERSE, MICHIGAN
DATE: REVISED MARCH, 1992
BY: GARY REESE
NAME: MIDWEST BIOSURVEYS

154	NATIVE TAXA
162	W/Adventives
4.64	NATIVE QUALITY
4.41	W/Adventives
57.54	NATIVE INDEX
56.10	W/Adventives
-2.2	NATIVE WETNESS
-2.1	W/Adventives
AVG:	FAC. WETLAND (-)

CofC	SCIENTIFIC NAME	CofW	WETNESS	COMMON NAME
3	Abies balsamea	-3	FACW	Fir, Balsam
	Occasional to common in Hardwood-Conifer Swamp			
1	Acer rubrum	0	FAC	Maple, Red
	Occasional to common in Hardwood-Conifer Swamp			
5	Acer saccharum	3	FACU	Maple, Sugar
	Occasional in Hardwood-Conifer Swamp			
	Actaea sp.			Baneberry
	Rare in Hardwood-Conifer Swamp			
6	Adiantum pedatum	1	FAC-	Fern, Maiden-hair
	Occasional in Hardwood-Conifer Swamp			
	Reese 2705 (8-20-91 #30)			
5	Agrostis perennans	1	FAC-	Autumn or Upland Bent
	Reese 2767 (7-18/19-91 #14) Localized occasional Hardwood-Conifer Swamp			
	Agrostis sp.			Bent Grass
	Reese 2644 (7-5-91 #1-45) Rare on riverside			
5	Alnus rugosa	-5	OBL	Alder, Speckled
	Common to dominant in Hardwood-Conifer Swamp			
3	Anaphalis margaritacea	5	upl	Pearly Everlasting
	Reese 2699 (8-20-91 #13)			
	Anemone (quinquefolia?)			
	Occasional in Hardwood-Conifer Swamp			
5	Aquilegia canadensis	1	FAC-	Columbine, Wild
	Occasional in Hardwood-Conifer Swamp			
3	Arabis (glabra?)	5	UPL	Mustard, Tower
	Reese 2743 (7-5-91 #1-9) Rare along Boardman River			
5	Aralia nudicaulis	3	FACU	Sarsaparilla, Wild
	Rare to occasional in Hardwood-Conifer Swamp			

5 Arisaema triphyllum -2 FACW- Jack-in-the-pulpit, Swamp
Occasional in Hardwood-Conifer Swamp
6 Asclepias incarnata -5 OBL Milkweed, Swamp
Common in Hardwood-Conifer swamp
Reese 2637 (8-19-91 #56) Localized occasional in Hardwood-Conifer Swamp
2 Aster lateriflorus -2 FACW- Aster, Calico
Reese 2661 (9-16-91 #23) Occasional in Hardwood-Conifer Swamp
Reese 2707 (8-20-91 #33) Occasional in Hardwood-Conifer Swamp
3 Aster (novae-angliae?) -3 FACW Aster, New England
Reese 2674 (9-16-1991 #9) Occasional in Hardwood-Conifer Swamp
Aster sp.
Reese 2629 (9-16-91 #10) Occasional in Hardwood-Conifer Swamp
Reese #2631 (9-16-91 #26) Rare in Hardwood-Conifer Swamp
4 Athyrium filix-femina 0 FAC Fern, Lady
Common in Hardwood-Conifer Swamp
2 Betula papyrifera 2 FACU+ Birch, Paper
Common to dominant in Hardwood-Conifer Swamp
Reese 2725 (5-30-91 #72) Rare in Hardwood-Conifer Swamp
3 Bidens cernua -5 OBL Beggar-ticks, Nodding
Reese 2658 (9-16-91 #29) Locally common in Hardwood-Conifer Swamp
Reese 2663 (9-16-91 #21) Locally occasional in Hardwood-Conifer Swamp
Reese 2675 (9-16-91 #8) Occasional in Hardwood-Conifer Swamp
Reese 2755 (8-19-91 #48) Occasional in Hardwood-Conifer Swamp
1 Bidens frondosa -3 FACW Beggar-ticks, Devil's
Reese 2706 (8-20-91 #31) Localized occasional in springs in Hardwood-Conifer Swamp
5 Boehmeria cylindrica -5 OBL Nettle, False
Rare in Hardwood-Conifer Swamp
0 BRASSICA KABER PINNATIFIDA 5 UPL Charlock
Reese 2805 (5-30-91 #97) Hardwood-Conifer Swamp
8 Bromus kalmii 0 FAC Brome, Kalm's
Reese 2620 (7-18/19-91 #38) Hardwood-Conifer Swamp
Reese 2751 (8-19-91 #57) Occasional in Hardwood-Conifer Swamp
3 Calamagrostis canadensis -5 OBL Reedgrass, Blue-joint
Locally dominant in Hardwood-Conifer swamp
6 Caltha palustris -5 OBL Marsh-marigold
Locally common in Hardwood-Conifer Swamp
7 Campanula aparinoides -5 OBL Bellflower, Marsh
Rare to occasional in Hardwood-Conifer swamp
6 Carex bebbii -5 OBL Sedge, Bebb's
Reese 2770 (7-18/19-91 #17) Localized occasional in Hardwood-Conifer Swamp
5 Carex brunnescens -3 FACW Sedge, Brownish
Reese 2788 (5-30-91 #76) Locally common in Hardwood-Conifer Swamp
5 Carex comosa -5 OBL Sedge, Bristly
Reese 2671 (9-16-91) Occasional in Hardwood-Conifer Swamp
10 Carex disperma -5 OBL Sedge, Soft-leaf
Reese 2803 (5-30-91 #87) Hardwood-Conifer Swamp

4 Carex flava -5 OBL Sedge, Yellow
Reese 2667 (9-16-91 #17) Dominant in Northern Wet Meadow
Reese 2690 (7-5-91 #1-51) Rare (?) in Northern Wet Meadow
4 Carex gracillima 3 FACU Sedge, Graceful
Reese 2717 (5-30-91 #45)
Reese 2719 (5-30-91 #55)
2 Carex hystericina -5 OBL Sedge, Porcupine
Reese 2657 (9-16-91 #30) Localized occasional in Hardwood-Conifer Swamp
3 Carex intumescens -4 FACW+ Sedge, Bladder
Common in Hardwood-Conifer Swamp
Reese 2756 (8-20-91 #44) Occasional in seeps in Hardwood-Conifer Swamp
6 Carex lacustris -5 OBL Sedge, Lakebank
Reese 2639 (7-5-1991 #49) Occasional (?) in Wet Meadow
Reese 2722 (5-30-91 #63)
10 Carex prasina -5 OBL Sedge, Drooping
Reese 2786 (7-18/19-91 #13) Rare to occasional in Hardwood-Conifer Swamp
3 Carex retrorsa -5 OBL Sedge, Retrose
Reese 2782 (7-18/19-91 #9) Hardwood-Conifer Swamp
10 Carex sterilis -5 OBL Sedge, Dioecious
Reese #2804 (5-30-91 #96) Locally common in Hardwood-Conifer Swamp
1 Carex stipata -5 OBL Sedge
Reese 2686 (7-5-91 #1-35)
Reese 2718 (5-30-91 #49)
Reese 2783 (7-18/19-91 #10) Hardwood-Conifer Swamp
4 Carex stricta -5 OBL Sedge, Uptight
9 Carex trisperma -5 OBL Sedge, Three-seed
Reese 2796 (8-20-91 #17) Locally abundant in Hardwood-Conifer Swamp
Carex sp.
Reese 2595 (8-20-91 #45) Occasional in seeps in Hardwood-Conifer Swamp
Reese 2598 (8-19-91 #50) Occasional in Hardwood-Conifer Swamp
Reese 2602 (5-30-91 #106) Locally abundant in Hardwood-Conifer Swamp
Reese 2607 (7-5-1991 #1-69)
Reese 2608 (7-5-1991 #1-63) Shrub Thicket
Reese 2616 (5-30-91 #67) Hardwood-Conifer Swamp
Reese 2619 (7-18/19-91 #37) Hardwood-Conifer Swamp
Reese 2622 (7-18/19-91 #40 Hardwood-Conifer Swamp
Reese 2638 (7-5-91 #1-57) Dominant (?) in Wet Meadow
Reese 2642 (7-5-1991 #1-33) Rare (?) in Wet Meadow
Reese 2643 (7-5-1991 #1-41) Occasional in Wet Meadow
Reese 2646 (7-5-91 #1-11)
6 Carpinus caroliniana 0 FAC Hornbeam
Reese 2726 (5-31-91 #80)
7 Chelone glabra -5 OBL Turtlehead, White
Rare in Hardwood-Conifer Swamp

8	Gaultheria hispidula	-3	FACW	Snowberry, Creeping
	Reese 2701 (8-20-91 #19)			
5	Gaultheria procumbens	3	FACU	Teaberry
	Geranium (robertianum?)			Geranium
	Rare in Hardwood-Conifer Swamp			
8	Glyceria canadensis	-5	OBL	Grass, Canada Manna
	Locally abundant in Hardwood-Conifer Swamp			
4	Glyceria striata	-5	OBL	Grass, Fowl Manna
	Reese 2592 (7-18/19-91 #33)			
	Reese 2728 (5-30-91 #83) In Hardwood-Conifer Swamp			
	Reese 2747 (8-20-91 #26) Rare Hardwood-Conifer Swamp			
5	Gymnocarpium dryopteris	0	FAC	Fern, Oak
	Reese 2693 (8-20-91 #12) Occasional in Hardwood-Conifer Swamp			
	Reese 2733 (5-30-91 #102) Abundant in Hardwood-Conifer Swamp			
	Reese 2769 (7-18/19-91 #16) Rare in Hardwood-Conifer Swamp			
4	Hypericum majus	-3	FACW	St. John's-wort
	Reese 2748 (8-20-91 #16) Rare in Hardwood-Conifer Swamp			
	Hypericum sp.			
	Reese 2632 (9-16-91 #28) Rare in Hardwood-Conifer Swamp			
2	Impatiens capensis	-3	FACW	Touch-me-not, Spotted
	Occasional in Hardwood-Conifer Swamp			
	Reese 2708 (8-20-91 #37) Occasional in Hardwood-Conifer Swamp			
8	Juncus brevicaudatus	-5	OBL	Rush, Narrow-panicle
	Reese 2659 (9-16-91) Rare (?) in Hardwood-Conifer Swamp			
	Juncus sp.			
	Reese 2596 (9-16-91 #41) Abundant along two-track in Poor Conifer Swamp			
	Reese 2606 (7-5-1991 #1-73)			
	Reese 2640 (7-5-1991 #1-29) Rare in Wet Meadow			
5	Larix laricina	-3	FACW	Larch, American (Tamarack)
5	Lemna minor	-5	OBL	Duckweed, Lesser
	Reese 2673 (9-16-91 #11) Locally common in Hardwood-Conifer Swamp			
	Linaria sp.			
	Reese 2601 (9-16-91 #38) Occasional in disturbed areas in Poor Conifer Swamp			
6	Linnaea borealis	0	FAC	Twinflower
	Occasional in Hardwood-Conifer Swamp			
5	Lonicera dioica	3	FACU	Honeysuckle, Mountain
	Reese 2698 (7-5-1991 #1-61)			
5	Lycopodium lucidulum	-1	FAC+	Clubmoss, Shining
	Reese 2626 (7-18/19-91 #44) Hardwood-Conifer Swamp			
	Reese 2694 (8-20-91 #6) Rare in Hardwood-Conifer Swamp			
5	Lycopodium obscurum	3	FACU	Ground-pine, Flat-branched
	Reese 2662 (9-16-91 #22) Locally common in Hardwood-Conifer Swamp			
	Lycopus americanus			Bugleweed, American
	Localized occasional			

2	Lycopus uniflorus	-5	OBL	Bugleweed, Northern
	Rare to common in Hardwood-Conifer Swamp			
	Reese 2750 (8-20-91 #9) Common in Hardwood-Conifer Swamp			
6	Lysimachia terrestris	-5	OBL	Loosestrife, Swamp
	Reese 2687 (7-5-91 #1-37) Occasional in Northern Shrub Thicket			
4	Maianthemum canadense	0	FAC	Wild-lily-of-the-valley
	Common in Hardwood-Conifer Swamp			
	Reese 2711 (8-20-91 #47) Abundant in Hardwood-Conifer Swamp			
10	Medeola virginiana	5	UPL	Indian Cucumber-root
	Occasional in Hardwood-Conifer Swamp			
3	Mentha arvensis	-3	FACW	Mint, Wild
	Reese 2651 (9-16-91 #3) Occasional in Hardwood-Conifer Swamp			
5	Mimulus ringens	-5	OBL	Monkey-flower, Allegheny
	Reese 2703 (8-20-91 #27) Occasional in springs in Hardwood-Conifer Swamp			
	Reese 2697 (7-5-91 #1-65)			
8	Mitella diphylla	2	FACU+	Bishop's-cap, Two-flower
	Common in Hardwood-Conifer Swamp			
8	Mitella nuda	-3	FACW	Bishop's-cap, Naked
	Dominant in Hardwood-Conifer Swamp			
3	Muhlenbergia frondosa	-3	FACW	Muhly, Wire-stem
	Reese 2649 (8-20-91 #24) Locally dominant in Hardwood-Conifer Swamp			
	Reese 2742 (7-5-91 #1-27) Locally common in Northern Wet Meadow			
	Reese 2772 (7-18/19-91 #19) Localized occasional in Hardwood-Conifer Swamp			
10	Muhlenbergia glomerata	-4	FACW+	Muhly, Marsh
	Reese 2666 (9-16-91 #18) Rare in Northern Shrub Thicket			
6	Myrica gale	-5	OBL	Sweet Gale
	Occasional			
0	NASTURTIUM OFFICINALE	-5	OBL	Water-cress
	Reese 2652 (9-16-91 #36) Dominant in stream in Northern Shrub Thicket			
	Reese 2759 (9-16-91 #5) Locally abundant in stream in Hardwood-Conifer Swamp			
2	Onoclea sensibilis	-3	FACW	Fern, Sensitive
	Locally common in Hardwood-Conifer Swamp			
	Reese #2702 (8-20-91 #23) Rare in Hardwood-Conifer Swamp			
7	Orthilia secunda	-1	FAC+	Wintergreen, One-side
	(Oryzopsis asperifolia?)			
	Reese 2650 (8-20-91 #14) Localized occasional in springs within Hardwood-Conifer Swamp			
5	Osmunda cinnamomea	-3	FACW	Fern, Cinnamon
	Localized occasional in Hardwood-Conifer Swamp			
6	Osmunda claytoniana	-1	FAC+	Fern, Interrupted
5	Osmunda regalis	-5	OBL	Fern, Royal
	Panicum sp.			
	Reese 2603 (9-16-91 #40) Abundant (?) on roadside in Poor Conifer Swamp			
8	Parnassia glauca	-5	OBL	Grass-of-parnassus, Waxy
	Rare in Northern Shrub Thicket			
	Reese 2656 (9-16-91 #32) Locally common in Poor Conifer Swamp			

4	Parthenocissus inserta	3	FACU	Creeper, Thicket
	Occasional in Hardwood-Conifer Swamp			
	Reese 2684 (7-5-91 #1-23)			
0	Phalaris arundinacea	-4	FACW+	Grass, Reed Canary
	Localized in Hardwood-Conifer Swamp			
0	PHLEUM PRATENSE	3	FACU	Timothy
	Rare			
4	Physocarpus opulifolius	-2	FACW-	Ninebark, Eastern
	Reese 2688 (7-5-1991 #1-39) Occasional in Northern Shrub Thicket			
6	Picea mariana	-3	FACW	Spruce, Black
	Common in Hardwood-Conifer swamp			
3	Pinus strobus	3	FACU	Pine, White
	Occasional to abundant in Hardwood-Conifer Swamp			
0	PLANTAGO MAJOR	-1	FAC+	Plantain, Common
	Reese 2753 (8-19-91 #52) Rare in Hardwood-Conifer Swamp			
5	Platanthera hyperborea	-4	FACW+	Orchid, Northern Green
	Reese 2654 (9-16-91 #34) Locally rare to occasional in Hardwood-Conifer Swamp			
	Reese 2669 (9-16-91 #15) Rare in Northern Shrub Thicket			
3	Poa palustris	-4	FACW+	Bluegrass, Fowl Meadow
	Localized abundant in Hardwood-Conifer Swamp			
2	Populus balsamifera	-3	FACW	Poplar, Balsam
	In Poor Conifer Swamp margin			
1	Populus tremuloides	0	FAC	Aspen, Quaking
	Common in Hardwood-Conifer Swamp			
5	Potamogeton natans	-5	OBL	Pondweed, Floating-leaf
5	Prenanthes alba	3	FACU	Lettuce, White
	Reese 2750 (8-19-91 #58) Rare in Hardwood-Conifer Swamp			
0	PRUNELLA VULGARIS	0	FAC	Heal-all
	Reese #2749 (8-20-91 #15) Common Hardwood-Conifer Swamp			
	(Prunus pensylvanica?)			
	Reese 2670 (9-16-91 #14) Occasional in Northern Shrub Thicket			
	Reese 2704 (8-20-91 #29) Rare in Hardwood-Conifer Swamp			
2	Prunus virginiana	1	FAC-	Cherry, Choke
	Occasional in Hardwood-Conifer Swamp			
0	Pteridium aquilinum	3	FACU	Fern, Bracken
	Locally common to dominant in Hardwood-Conifer Swamp			
5	Ranunculus hispidus	0	FAC	Butter-cup, Swamp
	Locally common in Hardwood-Conifer Swamp			
5	Ranunculus recurvatus	-3	FACW	Butter-cup, Hooked
	Reese 2734 (5-30-91 #105)			
	Rosa (palustris?)			Rose
	Reese 2636 (8-20-91 #43) Rare in Hardwood-Conifer Swamp			
4	Rubus pubescens	-4	FACW+	Raspberry, Dwarf
	Reese 2594 (7-18/19-91 #35) Common to locally abundant in Hardwood-Conifer Swamp			
7	Rumex verticillatus	-5	OBL	Dock, Water (Dock, Swamp)
	Rare to occasional in Hardwood-Conifer Swamp			

1	Sagittaria latifolia	-5	OBL	Arrow-head, Broad-leaf
	Occasional			
2	Salix eriocephala	-3	FACW	Willow
	Reese 2787 (7-5-91 #1-59) Common in Northern Shrub Thicket			
3	Salix lucida	-4	FACW+	Willow, Shining
	Reese 2665 (9-16-91 #19) Occasional in Northern Shrub Thicket			
	Reese 2760 (7-18/19-91 #24)			
3	Sambucus canadensis	-2	FACW-	Elder, American
	Reese 2684 (7-5-91 #1-19) Localized rare			
4	Sanicula marilandica	3	facu	Black-snakeroot
	Reese 2740 (5-30-91 #137) Rare in Hardwood-Conifer Swamp			
5	Scirpus acutus	-5	OBL	Bulrush, Hard-stem
3	Scirpus atrovirens	-5	OBL	Bulrush, Green
	Occasional			
	Reese 2797 (8-20-91 #22) Rare in Hardwood-Conifer swamp			
5	Scirpus cyperinus	-5	OBL	Wool-grass
4	Scirpus validus	-5	OBL	Bulrush, Soft-stem
	Reese 2696 (7-5-91 #1-71) Locally abundant			
5	Scutellaria galericulata	-5	OBL	Skullcap, Hooded
	Occasional in Hardwood-Conifer swamp			
	Reese 2685 (7-5-91) Occasional in Northern Shrub Thicket			
5	Scutellaria lateriflora	-5	OBL	Skullcap, Mad Dog
	Reese 2791 (8-20-91 #32) Occasional in Hardwood-Conifer Swamp			
3	Senecio pauperculus	-1	FAC+	Groundsel, Balsam
	Rare in Hardwood-Conifer Swamp			
0	SOLANUM DULCAMARA	0	FAC	Nightshade, Climbing
	Common			
1	Solidago altissima	3	FACU	Goldenrod, Tall
	Reese 2621 (7-18/19-91 #39) Hardwood-Conifer Swamp			
3	Solidago rugosa	-1	FAC+	Golden-rod, Wrinkled
	Reese 2628 (9-16-91 #4) Common in Hardwood-Conifer Swamp			
	Reese 2664 (9-16-91 #20) Occasional in Hardwood-Conifer Swamp			
	Reese 2679 (9-16-91 #1) Occasional in Hardwood-Conifer Swamp			
	Reese 2790 (8-20-91 #34) Occasional in Hardwood-Conifer Swamp			
	Reese 2792 (8-20-91 #35) Occasional in Hardwood-Conifer Swamp			
	Reese 2794 (8-19-91 #4) Common in old field			
4	Solidago uliginosa	-5	OBL	Golden-rod, Bog
	Occasional in Hardwood-Conifer Swamp			
6	Sparganium chlorocarpum	-5	OBL	Burreed, Greenfruit
	Reese 2653 (9-16-91 #35) Occasional in Northern Shrub Thicket			
	Sphagnum sp.			Peat Moss
	Reese 2630 (9-16-91 #25) Dominant in Hardwood-Conifer Swamp			
6	Spirodela polyrhiza	-5	OBL	Duckweed, Greater

5	Stellaria longifolia	-4	FACW+	Chickweed
	Occasional in Hardwood-Conifer Swamp			
	Reese 2789 (5-30-91 #35) Occasional in Hardwood-Conifer Swamp			
	Reese 2808 (5-30-91 #113) Hardwood-Conifer Swamp			
6	Symplocarpus foetidus	-5	OBL	Skunk-cabbage
	Occasional in Hardwood-Conifer Swamp			
0	TARAXACUM OFFICINALE	3	FACU	Dandelion, Common
	Rare in Hardwood-Conifer Swamp			
5	Taxus canadensis	3	FACU	Yew, American
	Occasional in Hardwood-Conifer Swamp			
6	Thalictrum dioicum	2	FACU+	Meadow-rue, Early
	Rare in Hardwood-Conifer Swamp			
	Thalictrum sp.			Meadow-rue
	Occasional			
4	Thuja occidentalis	-3	FACW	Cedar, Northern White
	Common in Hardwood-Conifer Swamp			
9	Tiarella cordifolia	1	FAC-	Foamflower, Heart-leaf
	Reese 2735 (5-30-91 #109) In Hardwood-Conifer Swamp			
	Reese 2766 (7-18/19-91 #30)			
5	Trientalis borealis	-1	FAC+	Starflower, American
	Occasional in Hardwood-Conifer Swamp			
5	Tsuga canadensis	3	FACU	Hemlock, Eastern
0	TYPHA ANGUSTIFOLIA	-5	OBL	Cattail, Narrow-leaf
	Locally dominant in Hardwood-Conifer swamp			
1	Typha latifolia	-5	OBL	Cattail, Broad-leaf
	Local in Hardwood-Conifer swamp			
0	Typha Xglauca	-5	OBL	Cattail, Blue
	Locally dominant in a pond in Hardwood-Conifer swamp			
2	Ulmus rubra	0	FAC	Elm, Slippery
	Rare			
1	Urtica dioica procera	-1	FAC+	Nettle, Stinging
	Rare			
6	Utricularia vulgaris	-5	OBL	Bladderwort, Common
4	Vaccinium angustifolium	3	FACU	Blueberry, Lowbush
	Reese 2727 (5-30-91 #82) Occasional in Hardwood-Conifer Swamp			
	Reese 2731 (5-30-91 #93) In Hardwood-Conifer Swamp			
7	Vallisneria americana	-5	OBL	Wild-celery
	Reese 2744 (7-5-91 #1-47) Riverside			
4	Verbena hastata	-4	FACW+	Vervain, Blue
	Reese 2681 (7-5-91 #1-7)			
5	Viola blanda palustriformis	-2	FACW-	Violet, Sweet White
	Reese 2806 (5-30-91 #100) Occasional in Hardwood-Conifer Swamp			
1	Viola (sororia?)	1	FAC-	Violet, Common Blue
	Reese 2803 (5-30-91 #91) Hardwood-Conifer Swamp			

4	Circaea alpina	-3	FACW	Nightshade, Small Enchanter's
	Occasional (?) in Hardwood-Conifer swamp			
	Reese 2691 (8-20-91 #10)			
6	Cirsium muticum	-5	OBL	Thistle, Swamp
	Occasional in Hardwood-Conifer Swamp			
	Reese 2680 (7-5-91 #1-5) Common in Northern Wet Meadow			
	Reese 2668 (9-16-91 #16) Common in Northern Shrub Thicket			
	Reese 2773 (7-18/19-91 #20) Rare in Hardwood-Conifer Swamp			
10	Cladium mariscoides	-5	OBL	Sawgrass, Smooth
4	Clematis virginiana	0	FAC	Virgin's-bower, Virginia
	Occasional in Hardwood-Conifer Swamp			
5	Clintonia borealis	-1	FAC+	Beadlily, Blue
	Occasional in Hardwood-Conifer swamp			
5	Coptis trifoliata groenlandica	-3	FACW	Goldthread
	Occasional in Hardwood-Conifer Swamp			
6	Cornus canadensis	0	FAC	Bunchberry, Canada
	Occasional in Hardwood-Conifer Swamp			
	Cyperus sp.			
	Reese 2600 (9-16-91 #39) Common on roadsides adjacent to Poor Conifer Swamp			
5	Cypripedium (calceolus pubescens?)	-1	FAC+	Lady-slipper, Yellow
	Reese 2655 (9-16-91 #33) Localized occasional in Poor Conifer Swamp			
5	Cystopteris bulbifera	-2	FACW-	Fern, Bulblet
	Reese 2741 (7-5-91 #1-13) Rare along Boardman River			
	Reese 2758 (8-20-91 #41) Locally dominant in Hardwood-Conifer Swamp, esp. slopes and windthrows			
6	Drosera rotundifolia	-5	OBL	Sundew
	Occasional in Hardwood-Conifer swamp			
6	Dryopteris cristata	-5	OBL	Woodfern, Crested
	Reese 2700 (8-20-91 #18) Occasional in Hardwood-Conifer Swamp			
	Reese 2713 (8-19-91 #53) Occasional in Hardwood-Conifer Swamp			
	Reese 2729 (5-31-91 #88) In Hardwood-Conifer Swamp			
	Reese 2768 (7-18/19-91 #15) Rare in Hardwood-Conifer Swamp			
	Reese 2771 (7-18/19-91 #18) Hardwood-Conifer Swamp			
5	Dryopteris intermedia	0	FAC	Woodfern, Intermediate
	Reese 2593 (7-18/19-91 #34)			
	Reese 2692 (8-20-91 #11)			
5	Dryopteris spinulosa	-2	FACW-	Woodfern, Spinulose
	Reese 2715 (5-30-91 #33)			
	Reese 2720 (5-30-91 #57)			
	Dryopteris sp.			Woodfern
	Reese 2807 (5-30-91 #110) Common Hardwood-Conifer Swamp			
1	Elodea canadensis	-5	OBL	Water-weed, Broad
	Reese 2677 (9-16-91 #6) Locally common in stream in Hardwood-Conifer Swamp			
	Reese 2682 (7-5-91 #1-15)			
	Eleocharis sp.			Spike-rush
	Reese 2641 (7-5-1991 #1-31) Rare on riversides			
7	Elymus canadensis	1	FAC-	Wild-rye, Nodding

5 Viola striata -3 FACW Violet, Striped Cream
Reese 2723 (5-30-91 #64)
Viola sp.
Reese 2624 (7-18/19-91 #42) Common in Hardwood-Conifer Swamp
Reese 2757 (8-20-91 #39) Occasional in Hardwood-Conifer Swamp

Undetermined specimens:
Reese 2597 (8-20-91 #28) Rare in Hardwood-Conifer Swamp
Reese 2599 (8-20-91 #46) Rare in seeps in Hardwood-Conifer Swamp
Reese 2604 (7-5-1991 #1-67) Shrub Thickets (?)
Reese 2605 (5-30-91 #95) Hardwood-Conifer Swamp
Reese 2609 (8-20-1991 #36) Hardwood-Conifer Swamp
Reese 2612 (8-20-91 #7) Rare in Hardwood-Conifer Swamp
Reese 2613 (8-20-91 #21) Rare to occasional in Hardwood-Conifer Swamp
Reese 2617 (5-30-91 #99) Hardwood-Conifer Swamp
Reese 2618 (7-18/19-91 #36) Hardwood-Conifer Swamp
Reese 2623 (7-18/19-91 #41) Locally abundant in Hardwood-Conifer Swamp
Reese 2627 (7-18/19-91 #45) Rare as a weed in Hardwood-Conifer Swamp
Reese 2633 (9-16-91 #31) Rare in Hardwood-Conifer Swamp
Reese 2634 (9-16-91 #37) Rare in disturbed, cleared areas on river bank in Northern Shrub Thicket
Reese 2635 (8-20-91 #42) Rare in Hardwood-Conifer Swamp
Reese 2647 (8-19-91 #59) Rare in Hardwood-Conifer Swamp

SITE: BROWN BRIDGE QUIET AREA: UPLANDS
CO: GRAND TRAVERSE
DATE: REVISED MARCH, 1992
BY: GARY A. REESE
NAME: MIDWEST BIOSURVEYS

83	NATIVE TAXA
98	W/Adventives
4.54	NATIVE QUALITY
3.85	W/Adventives
41.38	NATIVE INDEX
38.08	W/Adventives
1.7	NATIVE WETNESS
1.9	W/Adventives
AVG:	FAC. UPLAND (+)

CofC	SCIENTIFIC NAME	CofW	WETNESS	COMMON NAME
3	Abies balsamea	-3	FACW	Fir, Balsam
	Common in Mesic Northern Forest			
	In Dry-Mesic Northern Forest			
1	Acer rubrum	0	FAC	Maple, Red
	In Dry Northern Forest and abundant in Dry-Mesic Northern Forest			
5	Acer saccharum	3	FACU	Maple, Sugar
	Dominant in Mesic Northern Forest and Dry-Mesic Northern Forest			
0	AGROPYRON REPENS	3	FACU	Quack Grass
	Reese 2745 (7-5-91 #1-53) Occasional in Mesic Northern Forest			
5	Agrostis perennans	1	FAC-	Autumn or Upland Bent
	Reese 2785 (7-18/19-91 #12) Localized occasional in Mesic Northern Forest			
	Agrostis sp.			
	Reese 2799 (5-30-91 #3) Common in Dry-Mesic Northern Forest			
4	Amelanchier arborea	3	FACU	Serviceberry
	In Mesic Northern Forest and dominant in Dry-Mesic Northern Forest			
3	Antennaria plantaginifolia	5	UPL	Pussy Toes
	Rare in Dry-Mesic Northern Forest			
5	Aquilegia canadensis	1	FAC-	Columbine, Wild
	Occasional in Mesic Northern Forest			
6	Arabis drummondii	3	FACU	Cress, Rock
	Rare in Dry-Mesic Northern Forest			
5	Aralia nudicaulis	3	FACU	Sarsaparilla, Wild
	Local in Mesic Northern Forest			
8	Aralia racemosa	5	UPL	Spikenard
	In Mesic Northern Forest			
5	Arisaema triphyllum	-2	FACW-	Jack-in-the-pulpit, Swamp
4	Aster macrophyllus	5	UPL	Aster
	In Mesic Northern Forest and locally common to abundant in Dry-Mesic Northern Forest			

Aster sp.
Reese 2610 (8-19-91 #3) Occasional in old field
Reese 2611 (8-20-91 #5) Roadside

0	BERTEROA INCANA	5	UPL	Alyssum, Hoary
	Locally weedy in Dry-Mesic Northern Forest			
2	Betula papyrifera	2	FACU+	Birch, Paper
	Common in Mesic Northern Forest			
5	Botrychium virginianum	3	FACU	Fern, Rattlesnake
	In Mesic Northern Forest			
0	BROMUS INERMIS	5	UPL	Brome, Smooth
	Reese 2763 (7-18/19-91 #27) Mesic Northern Forest			
4	Carex pensylvanica	5	UPL	Sedge, Pennsylvania
	In Dry Northern Forest and dominant in Dry-Mesic Northern Forest			
	Reese 2778 (7-18/19-91 #5) Dominant in Mesic Northern Forest			
	Reese 2802 (5-30-91 #17) Localized rare in Dry-Mesic Northern Forest			
6	Carpinus caroliniana	0	FAC	Hornbeam
	Dominant in Dry-Mesic Northern Forest			
0	CENTAUREA MACULOSA	5	UPL	Knapweed, Spotted
	Locally weedy in Dry-Mesic Northern Forest			
8	Cercis canadensis	3	FACU	Redbud
	In Mesic Northern Forest			
8	Chimaphila umbellata	5	upl	Prince's Pine
	Rare in Dry-Mesic Northern Forest			
4	Circaea alpina	-3	FACW	Nightshade, Small Enchanter's
	Occasional (?) in Mesic Northern Forest			
6	Comptonia peregrina	5	UPL	Sweetfern
	In Dry Northern Forest			
5	Coptis trifoliata groenlandica	-3	FACW	Goldthread
	Reese 2780 & 2781 (7-18/19-91 #7) Local in Mesic Northern Forest			
5	Corallorhiza maculata	4	FACU-	Coral-root, Spotted
	Rare in Mesic Northern Forest and localized occasional in Dry-Mesic Northern Forest			
6	Corallorhiza striata	4	FACU-	Coral-root, Striped
	Rare in Mesic Northern Forest			
5	Cypripedium acaule	-3	FACW	Moccasin Flower
	In Mesic Northern Forest and rare(?) in Dry-Mesic Northern Forest			
5	Cystopteris bulbifera	-2	FACW-	Fern, Bulblet
	In Mesic Northern Forest and Dry-Mesic Northern Forest			
0	DACTYLIS GLOMERATA	3	FACU	Orchard Grass
	Weedy in Mesic Northern Forest and localized occasional in Dry-Mesic Northern Forest			
4	Danthonia spicata	5	UPL	Poverty Grass
	Reese 2809 (5-30-91) Dominant in Mesic Northern Forest			
0	DAUCUS CAROTA	5	UPL	Carrot, Wild
	Weedy in Mesic Northern Forest			
0	EPIPACTIS HELLEBORINE	5	UPL	Helleborine
	Reese 2625 (7-18/19-91 #43) Rare in Mesic Northern Forest			

0	Equisetum arvense	0	FAC	Horsetail, Field
10	Equisetum palustre	-3	FACW	Horsetail, Marsh
	Reese #2811 (5-30-91 #135) Mesic Northern Forest			
5	Equisetum sylvaticum	-3	FACW	Horsetail, Wood
	Reese 2777 (7-18/19-91 #4) Locally abundant in Mesic Northern Forest			
6	Fagus grandifolia	3	FACU	Beech
	Rare to locally dominant in Mesic Northern Forest			
2	Fragaria virginiana	1	FAC-	Strawberry, Virginia
	In Mesic Northern Forest and rare in Dry-Mesic Northern Forest			
5	Fraxinus americana	3	FACU	Ash, White
	In Mesic Northern Forest			
5	Gaultheria procumbens	3	FACU	Teaberry
	In Mesic Northern Forest and localized occasional to common in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
7	Gaylussacia baccata	3	FACU	Huckleberry, Black
	Common in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
	Glyceria (striata?)			
	In Mesic Northern Forest			
7	Goodyera pubescens	0	FAC	Rattlesnake-plantain
	Reese 2779 (7-18/19-91 #6) Rare in Mesic Northern Forest			
5	Hamamelis virginiana	3	FACU	Witch-hazel
	Local in Mesic Northern Forest and locally common in Dry-Mesic Northern Forest			
6	Hepatica americana	5	UPL	Hepatica
	In Mesic Northern Forest			
0	HYPERICUM PERFORATUM	5	UPL	St. John's-wort, Common
	Weedy and local in Dry-Mesic Northern Forest			
4	Krigia virginica	5	UPL	Dandelion, Dwarf
	Rare in Mesic Northern Forest			
5	Lonicera canadensis	3	FACU	Honeysuckle, American Fly
	In Dry-Mesic Northern Forest			
	Common in Mesic Northern Forest			
4	Lycopodium clavatum	0	FAC	Clubmoss, Staghorn
	In Mesic Northern Forest			
	Reese 2738 (5-30-91 #125) Locally common in Mesic Northern Forest			
5	Lycopodium complanatum	2	FACU+	Running-pine, Northern
	Occasional in Dry Northern Forest			
	Reese 2648 (5-30-91 #13) Localized rare to occasional in Dry-Mesic Northern Forest			
	Reese 2775 (7-18/19-91 #22) Occasional in Dry-Mesic Northern Forest			
5	Lycopodium obscurum	3	FACU	Ground-pine, Flat-branched
	Reese 2739 (5-30-91 #129) Occasional in Mesic Northern Forest			
4	Maianthemum canadense	0	FAC	Wild-lily-of-the-valley
	Common in Mesic Northern Forest and Dry-Mesic Northern Forest			
6	Melampyrum lineare	1	FAC-	Cow Wheat
	In Dry Northern Forest			

0	MELILOTUS ALBA	3	FACU	Sweet Clover, White
	Weedy in Mesic Northern Forest and locally weedy in Dry-Mesic Northern Forest			
0	MELILOTUS OFFICINALIS	3	FACU	Sweet Clover, Yellow
	Locally weedy in Dry-Mesic Northern Forest			
3	Mentha arvensis	-3	FACW	Mint, Wild
0	MENTHA X PIPERITA	-5	OBL	Peppermint
	Reese 2784 (7-18/19-91 #11) Occasional in Mesic Northern Forest			
5	Mitchella repens	2	FACU+	Berry, Partridge
	In Dry-Mesic Northern Forest and occasional in Mesic Northern Forest			
5	Monotropa uniflora	3	FACU	Indian Pipe
	Rare in Dry-Mesic Northern Forest			
2	Onoclea sensibilis	-3	FACW	Fern, Sensitive
	In Mesic Northern Forest			
6	Oryzopsis asperifolia	5	UPL	Rice-grass
	Reese 2737 (5-30-91 #119) Dominant in Mesic Northern Forest			
	Reese 2801 (5-30-91 #9) Rare in Dry-Mesic Northern Forest			
8	Oryzopsis racemosa	5	UPL	Rice-grass
	Reese 2776 (7-18/19-91 #2) Common in Dry-Mesic Northern Forest			
5	Ostrya virginiana	4	FACU-	Ironwood
	Occasional in Mesic Northern Forest			
3	Panicum clandestinum	-3	FACW	Panic Grass
	Reese 2774 (7-18/19-91 #21) Rare in Dry-Mesic Northern Forest			
	Panicum sp.			
	Reese 2615 (5-30-91 #27) Locally rare in Mesic Northern Forest			
5	Parthenocissus quinquefolia	1	FAC-	Creeper, Virginia
	In Mesic Northern Forest			
10	Pedicularis canadensis	2	FACU+	Betony, Wood
	In Dry-Mesic Northern Forest and locally abundant in Mesic Northern Forest			
0	PHLEUM PRATENSE	3	FACU	Timothy
	Weedy in Mesic Northern Forest			
3	Picea glauca	3	FACU	Spruce, White
	In Mesic Northern Forest and in Dry-Mesic Northern Forest			
5	Pinus banksiana	3	facu	Pine, Jack
	Dominant in Dry Northern Forest and localized occasional in Dry-Mesic Northern Forest			
6	Pinus resinosa	3	FACU	Pine, Red
	Locally common in Mesic Northern Forest and dominant in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
3	Pinus strobus	3	FACU	Pine, White
	Dominant in Mesic Northern Forest and Dry-Mesic Northern Forest			
	In Dry Northern Forest			
0	POA PRATENSIS	1	FAC-	Bluegrass, Kentucky
	Locally common in Mesic Northern Forest			
4	Populus grandidentata	3	FACU	Aspen, Largetooth
	In Dry-Mesic Northern Forest and abundant in Mesic Northern Forest			
	In Dry Northern Forest			

1	Populus tremuloides	0	FAC	Aspen, Quaking
	Occasional to Dominant in Mesic Northern Forest and common in Dry-Mesic Northern Forest			
5	Prenanthes alba	3	FACU	Lettuce, White
	Reese 2746 (7-5-91 #1-55) Rare in Mesic Northern Forest			
0	PRUNELLA VULGARIS	0	FAC	Heal-all
	Reese 2764 (7-18/19-91 #28) Mesic Northern Forest			
4	Prunus serotina	3	FACU	Cherry, Wild Black
	In Mesic Northern Forest and common in Dry-Mesic Northern Forest			
2	Prunus virginiana	1	FAC-	Cherry, Choke
	Common in Mesic Northern Forest			
0	Pteridium aquilinum	3	FACU	Fern, Bracken
	Dominant in Mesic Northern Forest and Dry-Mesic Northern Forest			
	In Dry Northern Forest			
5	Quercus alba	3	FACU	Oak, White
	Dominant in Dry-Mesic Northern Forest			
5	Quercus rubra	3	FACU	Oak, Red
	Occasional in Mesic Northern Forest			
6	Quercus velutina	5	UPL	Oak, Black
	Common to abundant in Dry-Mesic Northern Forest			
	In Dry Northern Forest			
1	Rubus allegheniensis	2	FACU+	Blackberry, Common
	Local in Mesic Northern Forest			
1	Rudbeckia hirta	3	FACU	Black-eyed Susan
	In Mesic Northern Forest			
3	Scirpus atrovirens	-5	OBL	Bulrush, Green
	Reese 2765 (7-18/19-91 #29) Mesic Northern Forest			
5	Smilacina racemosa	3	FACU	Spikenard, False
	Occasional to rare in Mesic Northern Forest and common in Dry-Mesic Northern Forest			
3	Solidago rugosa	-1	FAC+	Golden-rod, Wrinkled
5	Streptopus roseus	0	FAC	Twisted-stalk
	Common in Mesic Northern Forest and Dry-Mesic Northern Forest			
4	Thuja occidentalis	-3	FACW	Cedar, Northern White
	In Mesic Northern Forest			
5	Tilia americana	3	FACU	Basswood
	In Mesic Northern Forest			
2	Toxicodendron radicans	-1	FAC+	Ivy, Poison
	Local in Mesic Northern Forest			
5	Trientalis borealis	-1	FAC+	Starflower, American
	Common in Mesic Northern Forest and localized occasional in Dry-Mesic Northern Forest			
0	TRIFOLIUM PRATENSE	2	FACU+	Clover, Red
	Reese #2761 (7-18/19-91 #25) Weedy in Mesic Northern Forest			
5	Tsuga canadensis	3	FACU	Hemlock, Eastern
	Occasional in Mesic Northern Forest			
2	Ulmus rubra	0	FAC	Elm, Slippery
	In Mesic Northern Forest			

4	Vaccinium angustifolium	3	FACU	Blueberry, Lowbush

Dominant in Mesic Northern Forest
In Dry Northern Forest
Reese 2800 (5-30-91 #5) Dominant in Dry-Mesic Northern Forest
Vaccinium (caespitosum?)
In Dry Northern Forest

6	Viburnum acerifolium	5	UPL	Viburnum, Mapleleaf

Rare in Dry-Mesic Northern Forest

4	Viola pubescens	4	FACU-	Violet, Yellow

Reese 2810 (5-30-91 #133) Localized in Mesic Northern Forest

3	Vitis riparia	-2	FACW-	Grape, River-bank

Reese 2762 (7-18/19-91 #26) Mesic Northern Forest

Undetermined specimens:
Reese 2614 (5-30-91 #21) Rare in Mesic Northern Forest

SITE: BROWN BRIDGE QUIET AREA: WETLANDS
CO: GRAND TRAVERSE, MICHIGAN
DATE: REVISED MARCH, 1992
BY: GARY REESE
NAME: MIDWEST BIOSURVEYS

154	NATIVE TAXA
162	W/Adventives
4.64	NATIVE QUALITY
4.41	W/Adventives
57.54	NATIVE INDEX
56.10	W/Adventives
-2.2	NATIVE WETNESS
-2.1	W/Adventives
AVG:	FAC. WETLAND (-)

CofC	SCIENTIFIC NAME	CofW	WETNESS	COMMON NAME
3	Abies balsamea	-3	FACW	Fir, Balsam
	Occasional to common in Hardwood-Conifer Swamp			
1	Acer rubrum	0	FAC	Maple, Red
	Occasional to common in Hardwood-Conifer Swamp			
5	Acer saccharum	3	FACU	Maple, Sugar
	Occasional in Hardwood-Conifer Swamp			
	Actaea sp.			Baneberry
	Rare in Hardwood-Conifer Swamp			
6	Adiantum pedatum	1	FAC-	Fern, Maiden-hair
	Occasional in Hardwood-Conifer Swamp			
	Reese 2705 (8-20-91 #30)			
5	Agrostis perennans	1	FAC-	Autumn or Upland Bent
	Reese 2767 (7-18/19-91 #14) Localized occasional Hardwood-Conifer Swamp			
	Agrostis sp.			Bent Grass
	Reese 2644 (7-5-91 #1-45) Rare on riverside			
5	Alnus rugosa	-5	OBL	Alder, Speckled
	Common to dominant in Hardwood-Conifer Swamp			
3	Anaphalis margaritacea	5	upl	Pearly Everlasting
	Reese 2699 (8-20-91 #13)			
	Anemone (quinquefolia?)			
	Occasional in Hardwood-Conifer Swamp			
5	Aquilegia canadensis	1	FAC-	Columbine, Wild
	Occasional in Hardwood-Conifer Swamp			
3	Arabis (glabra?)	5	UPL	Mustard, Tower
	Reese 2743 (7-5-91 #1-9) Rare along Boardman River			
5	Aralia nudicaulis	3	FACU	Sarsaparilla, Wild
	Rare to occasional in Hardwood-Conifer Swamp			

5	Arisaema triphyllum	-2	FACW-	Jack-in-the-pulpit, Swamp
	Occasional in Hardwood-Conifer Swamp			
6	Asclepias incarnata	-5	OBL	Milkweed, Swamp
	Common in Hardwood-Conifer swamp			
	Reese 2637 (8-19-91 #56) Localized occasional in Hardwood-Conifer Swamp			
2	Aster lateriflorus	-2	FACW-	Aster, Calico
	Reese 2661 (9-16-91 #23) Occasional in Hardwood-Conifer Swamp			
	Reese 2707 (8-20-91 #33) Occasional in Hardwood-Conifer Swamp			
3	Aster (novae-angliae?)	-3	FACW	Aster, New England
	Reese 2674 (9-16-1991 #9) Occasional in Hardwood-Conifer Swamp			
	Aster sp.			
	Reese 2629 (9-16-91 #10) Occasional in Hardwood-Conifer Swamp			
	Reese #2631 (9-16-91 #26) Rare in Hardwood-Conifer Swamp			
4	Athyrium filix-femina	0	FAC	Fern, Lady
	Common in Hardwood-Conifer Swamp			
2	Betula papyrifera	2	FACU+	Birch, Paper
	Common to dominant in Hardwood-Conifer Swamp			
	Reese 2725 (5-30-91 #72) Rare in Hardwood-Conifer Swamp			
3	Bidens cernua	-5	OBL	Beggar-ticks, Nodding
	Reese 2658 (9-16-91 #29) Locally common in Hardwood-Conifer Swamp			
	Reese 2663 (9-16-91 #21) Locally occasional in Hardwood-Conifer Swamp			
	Reese 2675 (9-16-91 #8) Occasional in Hardwood-Conifer Swamp			
	Reese 2755 (8-19-91 #48) Occasional in Hardwood-Conifer Swamp			
1	Bidens frondosa	-3	FACW	Beggar-ticks, Devil's
	Reese 2706 (8-20-91 #31) Localized occasional in springs in Hardwood-Conifer Swamp			
5	Boehmeria cylindrica	-5	OBL	Nettle, False
	Rare in Hardwood-Conifer Swamp			
0	BRASSICA KABER PINNATIFIDA	5	UPL	Charlock
	Reese 2805 (5-30-91 #97) Hardwood-Conifer Swamp			
8	Bromus kalmii	0	FAC	Brome, Kalm's
	Reese 2620 (7-18/19-91 #38) Hardwood-Conifer Swamp			
	Reese 2751 (8-19-91 #57) Occasional in Hardwood-Conifer Swamp			
3	Calamagrostis canadensis	-5	OBL	Reedgrass, Blue-joint
	Locally dominant in Hardwood-Conifer swamp			
6	Caltha palustris	-5	OBL	Marsh-marigold
	Locally common in Hardwood-Conifer Swamp			
7	Campanula aparinoides	-5	OBL	Bellflower, Marsh
	Rare to occasional in Hardwood-Conifer swamp			
6	Carex bebbii	-5	OBL	Sedge, Bebb's
	Reese 2770 (7-18/19-91 #17) Localized occasional in Hardwood-Conifer Swamp			
5	Carex brunnescens	-3	FACW	Sedge, Brownish
	Reese 2788 (5-30-91 #76) Locally common in Hardwood-Conifer Swamp			
5	Carex comosa	-5	OBL	Sedge, Bristly
	Reese 2671 (9-16-91) Occasional in Hardwood-Conifer Swamp			
10	Carex disperma	-5	OBL	Sedge, Soft-leaf
	Reese 2803 (5-30-91 #87) Hardwood-Conifer Swamp			

4 Carex flava -5 OBL Sedge, Yellow
Reese 2667 (9-16-91 #17) Dominant in Northern Wet Meadow
Reese 2690 (7-5-91 #1-51) Rare (?) in Northern Wet Meadow
4 Carex gracillima 3 FACU Sedge, Graceful
Reese 2717 (5-30-91 #45)
Reese 2719 (5-30-91 #55)
2 Carex hystericina -5 OBL Sedge, Porcupine
Reese 2657 (9-16-91 #30) Localized occasional in Hardwood-Conifer Swamp
3 Carex intumescens -4 FACW+ Sedge, Bladder
Common in Hardwood-Conifer Swamp
Reese 2756 (8-20-91 #44) Occasional in seeps in Hardwood-Conifer Swamp
6 Carex lacustris -5 OBL Sedge, Lakebank
Reese 2639 (7-5-1991 #49) Occasional (?) in Wet Meadow
Reese 2722 (5-30-91 #63)
10 Carex prasina -5 OBL Sedge, Drooping
Reese 2786 (7-18/19-91 #13) Rare to occasional in Hardwood-Conifer Swamp
3 Carex retrorsa -5 OBL Sedge, Retrose
Reese 2782 (7-18/19-91 #9) Hardwood-Conifer Swamp
10 Carex sterilis -5 OBL Sedge, Dioecious
Reese #2804 (5-30-91 #96) Locally common in Hardwood-Conifer Swamp
1 Carex stipata -5 OBL Sedge
Reese 2686 (7-5-91 #1-35)
Reese 2718 (5-30-91 #49)
Reese 2783 (7-18/19-91 #10) Hardwood-Conifer Swamp
4 Carex stricta -5 OBL Sedge, Uptight
9 Carex trisperma -5 OBL Sedge, Three-seed
Reese 2796 (8-20-91 #17) Locally abundant in Hardwood-Conifer Swamp
Carex sp.
Reese 2595 (8-20-91 #45) Occasional in seeps in Hardwood-Conifer Swamp
Reese 2598 (8-19-91 #50) Occasional in Hardwood-Conifer Swamp
Reese 2602 (5-30-91 #106) Locally abundant in Hardwood-Conifer Swamp
Reese 2607 (7-5-1991 #1-69)
Reese 2608 (7-5-1991 #1-63) Shrub Thicket
Reese 2616 (5-30-91 #67) Hardwood-Conifer Swamp
Reese 2619 (7-18/19-91 #37) Hardwood-Conifer Swamp
Reese 2622 (7-18/19-91 #40 Hardwood-Conifer Swamp
Reese 2638 (7-5-91 #1-57) Dominant (?) in Wet Meadow
Reese 2642 (7-5-1991 #1-33) Rare (?) in Wet Meadow
Reese 2643 (7-5-1991 #1-41) Occasional in Wet Meadow
Reese 2646 (7-5-91 #1-11)
6 Carpinus caroliniana 0 FAC Hornbeam
Reese 2726 (5-31-91 #80)
7 Chelone glabra -5 OBL Turtlehead, White
Rare in Hardwood-Conifer Swamp

8	Gaultheria hispidula	-3	FACW	Snowberry, Creeping
	Reese 2701 (8-20-91 #19)			
5	Gaultheria procumbens	3	FACU	Teaberry
	Geranium (robertianum?)			Geranium
	Rare in Hardwood-Conifer Swamp			
8	Glyceria canadensis	-5	OBL	Grass, Canada Manna
	Locally abundant in Hardwood-Conifer Swamp			
4	Glyceria striata	-5	OBL	Grass, Fowl Manna
	Reese 2592 (7-18/19-91 #33)			
	Reese 2728 (5-30-91 #83) In Hardwood-Conifer Swamp			
	Reese 2747 (8-20-91 #26) Rare Hardwood-Conifer Swamp			
5	Gymnocarpium dryopteris	0	FAC	Fern, Oak
	Reese 2693 (8-20-91 #12) Occasional in Hardwood-Conifer Swamp			
	Reese 2733 (5-30-91 #102) Abundant in Hardwood-Conifer Swamp			
	Reese 2769 (7-18/19-91 #16) Rare in Hardwood-Conifer Swamp			
4	Hypericum majus	-3	FACW	St. John's-wort
	Reese 2748 (8-20-91 #16) Rare in Hardwood-Conifer Swamp			
	Hypericum sp.			
	Reese 2632 (9-16-91 #28) Rare in Hardwood-Conifer Swamp			
2	Impatiens capensis	-3	FACW	Touch-me-not, Spotted
	Occasional in Hardwood-Conifer Swamp			
	Reese 2708 (8-20-91 #37) Occasional in Hardwood-Conifer Swamp			
8	Juncus brevicaudatus	-5	OBL	Rush, Narrow-panicle
	Reese 2659 (9-16-91) Rare (?) in Hardwood-Conifer Swamp			
	Juncus sp.			
	Reese 2596 (9-16-91 #41) Abundant along two-track in Poor Conifer Swamp			
	Reese 2606 (7-5-1991 #1-73)			
	Reese 2640 (7-5-1991 #1-29) Rare in Wet Meadow			
5	Larix laricina	-3	FACW	Larch, American (Tamarack)
5	Lemna minor	-5	OBL	Duckweed, Lesser
	Reese 2673 (9-16-91 #11) Locally common in Hardwood-Conifer Swamp			
	Linaria sp.			
	Reese 2601 (9-16-91 #38) Occasional in disturbed areas in Poor Conifer Swamp			
6	Linnaea borealis	0	FAC	Twinflower
	Occasional in Hardwood-Conifer Swamp			
5	Lonicera dioica	3	FACU	Honeysuckle, Mountain
	Reese 2698 (7-5-1991 #1-61)			
5	Lycopodium lucidulum	-1	FAC+	Clubmoss, Shining
	Reese 2626 (7-18/19-91 #44) Hardwood-Conifer Swamp			
	Reese 2694 (8-20-91 #6) Rare in Hardwood-Conifer Swamp			
5	Lycopodium obscurum	3	FACU	Ground-pine, Flat-branched
	Reese 2662 (9-16-91 #22) Locally common in Hardwood-Conifer Swamp			
	Lycopus americanus			Bugleweed, American
	Localized occasional			

2 Lycopus uniflorus -5 OBL Bugleweed, Northern
Rare to common in Hardwood-Conifer Swamp
Reese 2750 (8-20-91 #9) Common in Hardwood-Conifer Swamp
6 Lysimachia terrestris -5 OBL Loosestrife, Swamp
Reese 2687 (7-5-91 #1-37) Occasional in Northern Shrub Thicket
4 Maianthemum canadense 0 FAC Wild-lily-of-the-valley
Common in Hardwood-Conifer Swamp
Reese 2711 (8-20-91 #47) Abundant in Hardwood-Conifer Swamp
10 Medeola virginiana 5 UPL Indian Cucumber-root
Occasional in Hardwood-Conifer Swamp
3 Mentha arvensis -3 FACW Mint, Wild
Reese 2651 (9-16-91 #3) Occasional in Hardwood-Conifer Swamp
5 Mimulus ringens -5 OBL Monkey-flower, Allegheny
Reese 2703 (8-20-91 #27) Occasional in springs in Hardwood-Conifer Swamp
Reese 2697 (7-5-91 #1-65)
8 Mitella diphylla 2 FACU+ Bishop's-cap, Two-flower
Common in Hardwood-Conifer Swamp
8 Mitella nuda -3 FACW Bishop's-cap, Naked
Dominant in Hardwood-Conifer Swamp
3 Muhlenbergia frondosa -3 FACW Muhly, Wire-stem
Reese 2649 (8-20-91 #24) Locally dominant in Hardwood-Conifer Swamp
Reese 2742 (7-5-91 #1-27) Locally common in Northern Wet Meadow
Reese 2772 (7-18/19-91 #19) Localized occasional in Hardwood-Conifer Swamp
10 Muhlenbergia glomerata -4 FACW+ Muhly, Marsh
Reese 2666 (9-16-91 #18) Rare in Northern Shrub Thicket
6 Myrica gale -5 OBL Sweet Gale
Occasional
0 NASTURTIUM OFFICINALE -5 OBL Water-cress
Reese 2652 (9-16-91 #36) Dominant in stream in Northern Shrub Thicket
Reese 2759 (9-16-91 #5) Locally abundant in stream in Hardwood-Conifer Swamp
2 Onoclea sensibilis -3 FACW Fern, Sensitive
Locally common in Hardwood-Conifer Swamp
Reese #2702 (8-20-91 #23) Rare in Hardwood-Conifer Swamp
7 Orthilia secunda -1 FAC+ Wintergreen, One-side
(Oryzopsis asperifolia?)
Reese 2650 (8-20-91 #14) Localized occasional in springs within Hardwood-Conifer Swamp
5 Osmunda cinnamomea -3 FACW Fern, Cinnamon
Localized occasional in Hardwood-Conifer Swamp
6 Osmunda claytoniana -1 FAC+ Fern, Interrupted
5 Osmunda regalis -5 OBL Fern, Royal
Panicum sp.
Reese 2603 (9-16-91 #40) Abundant (?) on roadside in Poor Conifer Swamp
8 Parnassia glauca -5 OBL Grass-of-parnassus, Waxy
Rare in Northern Shrub Thicket
Reese 2656 (9-16-91 #32) Locally common in Poor Conifer Swamp

4	Parthenocissus inserta	3	FACU	Creeper, Thicket
	Occasional in Hardwood-Conifer Swamp			
	Reese 2684 (7-5-91 #1-23)			
0	Phalaris arundinacea	-4	FACW+	Grass, Reed Canary
	Localized in Hardwood-Conifer Swamp			
0	PHLEUM PRATENSE	3	FACU	Timothy
	Rare			
4	Physocarpus opulifolius	-2	FACW-	Ninebark, Eastern
	Reese 2688 (7-5-1991 #1-39) Occasional in Northern Shrub Thicket			
6	Picea mariana	-3	FACW	Spruce, Black
	Common in Hardwood-Conifer swamp			
3	Pinus strobus	3	FACU	Pine, White
	Occasional to abundant in Hardwood-Conifer Swamp			
0	PLANTAGO MAJOR	-1	FAC+	Plantain, Common
	Reese 2753 (8-19-91 #52) Rare in Hardwood-Conifer Swamp			
5	Platanthera hyperborea	-4	FACW+	Orchid, Northern Green
	Reese 2654 (9-16-91 #34) Locally rare to occasional in Hardwood-Conifer Swamp			
	Reese 2669 (9-16-91 #15) Rare in Northern Shrub Thicket			
3	Poa palustris	-4	FACW+	Bluegrass, Fowl Meadow
	Localized abundant in Hardwood-Conifer Swamp			
2	Populus balsamifera	-3	FACW	Poplar, Balsam
	In Poor Conifer Swamp margin			
1	Populus tremuloides	0	FAC	Aspen, Quaking
	Common in Hardwood-Conifer Swamp			
5	Potamogeton natans	-5	OBL	Pondweed, Floating-leaf
5	Prenanthes alba	3	FACU	Lettuce, White
	Reese 2750 (8-19-91 #58) Rare in Hardwood-Conifer Swamp			
0	PRUNELLA VULGARIS	0	FAC	Heal-all
	Reese #2749 (8-20-91 #15) Common Hardwood-Conifer Swamp			
	(Prunus pensylvanica?)			
	Reese 2670 (9-16-91 #14) Occasional in Northern Shrub Thicket			
	Reese 2704 (8-20-91 #29) Rare in Hardwood-Conifer Swamp			
2	Prunus virginiana	1	FAC-	Cherry, Choke
	Occasional in Hardwood-Conifer Swamp			
0	Pteridium aquilinum	3	FACU	Fern, Bracken
	Locally common to dominant in Hardwood-Conifer Swamp			
5	Ranunculus hispidus	0	FAC	Butter-cup, Swamp
	Locally common in Hardwood-Conifer Swamp			
5	Ranunculus recurvatus	-3	FACW	Butter-cup, Hooked
	Reese 2734 (5-30-91 #105)			
	Rosa (palustris?)			Rose
	Reese 2636 (8-20-91 #43) Rare in Hardwood-Conifer Swamp			
4	Rubus pubescens	-4	FACW+	Raspberry, Dwarf
	Reese 2594 (7-18/19-91 #35) Common to locally abundant in Hardwood-Conifer Swamp			
7	Rumex verticillatus	-5	OBL	Dock, Water (Dock, Swamp)
	Rare to occasional in Hardwood-Conifer Swamp			

1	Sagittaria latifolia	-5	OBL	Arrow-head, Broad-leaf
	Occasional			
2	Salix eriocephala	-3	FACW	Willow
	Reese 2787 (7-5-91 #1-59) Common in Northern Shrub Thicket			
3	Salix lucida	-4	FACW+	Willow, Shining
	Reese 2665 (9-16-91 #19) Occasional in Northern Shrub Thicket			
	Reese 2760 (7-18/19-91 #24)			
3	Sambucus canadensis	-2	FACW-	Elder, American
	Reese 2684 (7-5-91 #1-19) Localized rare			
4	Sanicula marilandica	3	facu	Black-snakeroot
	Reese 2740 (5-30-91 #137) Rare in Hardwood-Conifer Swamp			
5	Scirpus acutus	-5	OBL	Bulrush, Hard-stem
3	Scirpus atrovirens	-5	OBL	Bulrush, Green
	Occasional			
	Reese 2797 (8-20-91 #22) Rare in Hardwood-Conifer swamp			
5	Scirpus cyperinus	-5	OBL	Wool-grass
4	Scirpus validus	-5	OBL	Bulrush, Soft-stem
	Reese 2696 (7-5-91 #1-71) Locally abundant			
5	Scutellaria galericulata	-5	OBL	Skullcap, Hooded
	Occasional in Hardwood-Conifer swamp			
	Reese 2685 (7-5-91) Occasional in Northern Shrub Thicket			
5	Scutellaria lateriflora	-5	OBL	Skullcap, Mad Dog
	Reese 2791 (8-20-91 #32) Occasional in Hardwood-Conifer Swamp			
3	Senecio pauperculus	-1	FAC+	Groundsel, Balsam
	Rare in Hardwood-Conifer Swamp			
0	SOLANUM DULCAMARA	0	FAC	Nightshade, Climbing
	Common			
1	Solidago altissima	3	FACU	Goldenrod, Tall
	Reese 2621 (7-18/19-91 #39) Hardwood-Conifer Swamp			
3	Solidago rugosa	-1	FAC+	Golden-rod, Wrinkled
	Reese 2628 (9-16-91 #4) Common in Hardwood-Conifer Swamp			
	Reese 2664 (9-16-91 #20) Occasional in Hardwood-Conifer Swamp			
	Reese 2679 (9-16-91 #1) Occasional in Hardwood-Conifer Swamp			
	Reese 2790 (8-20-91 #34) Occasional in Hardwood-Conifer Swamp			
	Reese 2792 (8-20-91 #35) Occasional in Hardwood-Conifer Swamp			
	Reese 2794 (8-19-91 #4) Common in old field			
4	Solidago uliginosa	-5	OBL	Golden-rod, Bog
	Occasional in Hardwood-Conifer Swamp			
6	Sparganium chlorocarpum	-5	OBL	Burreed, Greenfruit
	Reese 2653 (9-16-91 #35) Occasional in Northern Shrub Thicket			
	Sphagnum sp.			Peat Moss
	Reese 2630 (9-16-91 #25) Dominant in Hardwood-Conifer Swamp			
6	Spirodela polyrhiza	-5	OBL	Duckweed, Greater

5	Stellaria longifolia	-4	FACW+	Chickweed
	Occasional in Hardwood-Conifer Swamp			
	Reese 2789 (5-30-91 #35) Occasional in Hardwood-Conifer Swamp			
	Reese 2808 (5-30-91 #113) Hardwood-Conifer Swamp			
6	Symplocarpus foetidus	-5	OBL	Skunk-cabbage
	Occasional in Hardwood-Conifer Swamp			
0	TARAXACUM OFFICINALE	3	FACU	Dandelion, Common
	Rare in Hardwood-Conifer Swamp			
5	Taxus canadensis	3	FACU	Yew, American
	Occasional in Hardwood-Conifer Swamp			
6	Thalictrum dioicum	2	FACU+	Meadow-rue, Early
	Rare in Hardwood-Conifer Swamp			
	Thalictrum sp.			Meadow-rue
	Occasional			
4	Thuja occidentalis	-3	FACW	Cedar, Northern White
	Common in Hardwood-Conifer Swamp			
9	Tiarella cordifolia	1	FAC-	Foamflower, Heart-leaf
	Reese 2735 (5-30-91 #109) In Hardwood-Conifer Swamp			
	Reese 2766 (7-18/19-91 #30)			
5	Trientalis borealis	-1	FAC+	Starflower, American
	Occasional in Hardwood-Conifer Swamp			
5	Tsuga canadensis	3	FACU	Hemlock, Eastern
0	TYPHA ANGUSTIFOLIA	-5	OBL	Cattail, Narrow-leaf
	Locally dominant in Hardwood-Conifer swamp			
1	Typha latifolia	-5	OBL	Cattail, Broad-leaf
	Local in Hardwood-Conifer swamp			
0	Typha Xglauca	-5	OBL	Cattail, Blue
	Locally dominant in a pond in Hardwood-Conifer swamp			
2	Ulmus rubra	0	FAC	Elm, Slippery
	Rare			
1	Urtica dioica procera	-1	FAC+	Nettle, Stinging
	Rare			
6	Utricularia vulgaris	-5	OBL	Bladderwort, Common
4	Vaccinium angustifolium	3	FACU	Blueberry, Lowbush
	Reese 2727 (5-30-91 #82) Occasional in Hardwood-Conifer Swamp			
	Reese 2731 (5-30-91 #93) In Hardwood-Conifer Swamp			
7	Vallisneria americana	-5	OBL	Wild-celery
	Reese 2744 (7-5-91 #1-47) Riverside			
4	Verbena hastata	-4	FACW+	Vervain, Blue
	Reese 2681 (7-5-91 #1-7)			
5	Viola blanda palustriformis	-2	FACW-	Violet, Sweet White
	Reese 2806 (5-30-91 #100) Occasional in Hardwood-Conifer Swamp			
1	Viola (sororia?)	1	FAC-	Violet, Common Blue
	Reese 2803 (5-30-91 #91) Hardwood-Conifer Swamp			

4 Circaea alpina -3 FACW Nightshade, Small Enchanter's
Occasional (?) in Hardwood-Conifer swamp
Reese 2691 (8-20-91 #10)
6 Cirsium muticum -5 OBL Thistle, Swamp
Occasional in Hardwood-Conifer Swamp
Reese 2680 (7-5-91 #1-5) Common in Northern Wet Meadow
Reese 2668 (9-16-91 #16) Common in Northern Shrub Thicket
Reese 2773 (7-18/19-91 #20) Rare in Hardwood-Conifer Swamp
10 Cladium mariscoides -5 OBL Sawgrass, Smooth
4 Clematis virginiana 0 FAC Virgin's-bower, Virginia
Occasional in Hardwood-Conifer Swamp
5 Clintonia borealis -1 FAC+ Beadlily, Blue
Occasional in Hardwood-Conifer swamp
5 Coptis trifoliata groenlandica -3 FACW Goldthread
Occasional in Hardwood-Conifer Swamp
6 Cornus canadensis 0 FAC Bunchberry, Canada
Occasional in Hardwood-Conifer Swamp
Cyperus sp.
Reese 2600 (9-16-91 #39) Common on roadsides adjacent to Poor Conifer Swamp
5 Cypripedium (calceolus pubescens?) -1 FAC+ Lady-slipper, Yellow
Reese 2655 (9-16-91 #33) Localized occasional in Poor Conifer Swamp
5 Cystopteris bulbifera -2 FACW- Fern, Bulblet
Reese 2741 (7-5-91 #1-13) Rare along Boardman River
Reese 2758 (8-20-91 #41) Locally dominant in Hardwood-Conifer Swamp, esp. slopes and windthrows
6 Drosera rotundifolia -5 OBL Sundew
Occasional in Hardwood-Conifer swamp
6 Dryopteris cristata -5 OBL Woodfern, Crested
Reese 2700 (8-20-91 #18) Occasional in Hardwood-Conifer Swamp
Reese 2713 (8-19-91 #53) Occasional in Hardwood-Conifer Swamp
Reese 2729 (5-31-91 #88) In Hardwood-Conifer Swamp
Reese 2768 (7-18/19-91 #15) Rare in Hardwood-Conifer Swamp
Reese 2771 (7-18/19-91 #18) Hardwood-Conifer Swamp
5 Dryopteris intermedia 0 FAC Woodfern, Intermediate
Reese 2593 (7-18/19-91 #34)
Reese 2692 (8-20-91 #11)
5 Dryopteris spinulosa -2 FACW- Woodfern, Spinulose
Reese 2715 (5-30-91 #33)
Reese 2720 (5-30-91 #57)
Dryopteris sp. Woodfern
Reese 2807 (5-30-91 #110) Common Hardwood-Conifer Swamp
1 Elodea canadensis -5 OBL Water-weed, Broad
Reese 2677 (9-16-91 #6) Locally common in stream in Hardwood-Conifer Swamp
Reese 2682 (7-5-91 #1-15)
Eleocharis sp. Spike-rush
Reese 2641 (7-5-1991 #1-31) Rare on riversides
7 Elymus canadensis 1 FAC- Wild-rye, Nodding

5 Viola striata -3 FACW Violet, Striped Cream
Reese 2723 (5-30-91 #64)
Viola sp.
Reese 2624 (7-18/19-91 #42) Common in Hardwood-Conifer Swamp
Reese 2757 (8-20-91 #39) Occasional in Hardwood-Conifer Swamp

Undetermined specimens:
Reese 2597 (8-20-91 #28) Rare in Hardwood-Conifer Swamp
Reese 2599 (8-20-91 #46) Rare in seeps in Hardwood-Conifer Swamp
Reese 2604 (7-5-1991 #1-67) Shrub Thickets (?)
Reese 2605 (5-30-91 #95) Hardwood-Conifer Swamp
Reese 2609 (8-20-1991 #36) Hardwood-Conifer Swamp
Reese 2612 (8-20-91 #7) Rare in Hardwood-Conifer Swamp
Reese 2613 (8-20-91 #21) Rare to occasional in Hardwood-Conifer Swamp
Reese 2617 (5-30-91 #99) Hardwood-Conifer Swamp
Reese 2618 (7-18/19-91 #36) Hardwood-Conifer Swamp
Reese 2623 (7-18/19-91 #41) Locally abundant in Hardwood-Conifer Swamp
Reese 2627 (7-18/19-91 #45) Rare as a weed in Hardwood-Conifer Swamp
Reese 2633 (9-16-91 #31) Rare in Hardwood-Conifer Swamp
Reese 2634 (9-16-91 #37) Rare in disturbed, cleared areas on river bank in Northern Shrub Thicket
Reese 2635 (8-20-91 #42) Rare in Hardwood-Conifer Swamp
Reese 2647 (8-19-91 #59) Rare in Hardwood-Conifer Swamp

APPENDIX "C"

WILDLIFE SPECIES LIST

Listed are species that occur at Brown Bridge. This list should be updated as new specie are encountered.

BIRDS

COMMON NAME	SCIENTIFIC NAME
Blackbird, Red-winged	*Agelaius phoeniceus*
Bluebird, Eastern	*Sialia sialis*
Bufflehead	*Bucephala albeola*
Bunting, Indigo	*Passerina cyanea*
Canvasback	*Aythya valisineria*
Cardinal, Northern	*Cardinalis cardinalis*
Catbird, Gray	*Dumetella carolinensis*
Chickadee, Black-capped	*Parus atricapillus*
Coot, American	*Fulica americana*
Cormorant, Double-crested	*Phalacrocorax auritus*
Cowbird, Brown-headed	*Molothrus ater*
Crane, Sandhill	*Grus canadensis*
Creeper, Brown	*Certhia americana*
Crossbill, Red	*Loxia curvirostra*
Crossbill, White-winged	*Loxia leucoptera*
Crow, American (Common)	*Corvus brachyrhynchos*
Cuckoo, Black-billed	*Coccyzus erythropthalmus*
Dove, Mourning	*Zenaida macroura*
Duck, American Black	*Anas rubripes*
Duck, Ring-necked	*Aythya collaris*
Duck, Wood	*Aix sponsa*
Eagle, Bald	*Haliaeetus leucocephalus*
Finch, House	*Carpodacus mexicanus*
Finch, Purple	*Carpodacus purpureus*
Flicker, Northern	*Colaptes auratus*
Flycatcher, Alder	*Empidonax alnorum*
Flycatcher, Great Crested	*Myiarchus crinitus*
Flycatcher, Least	*Empidonax minimus*
Flycather, Willow	*Empidonax traillii*
Goldeneye, Common	*Bucephala clangula*
Goldfinch, American	*Carduelis tristis*
Goose, Canada	*Branta canadensis*
Goshawk, Northern	*Accipiter gentilis*
Grackle, Common	*Quiscalus quiscula*
Grebe, Pied-billed	*Podilumbus podiceps*
Grosbeak, Evening	*Coccothraustes vespertinus*
Grosbeak, Pine	*Pinicola enucleator*
Grosbeak, Rose-breasted	*Pheucticus ludovicianus*
Grouse, Ruffed	*Bonasa umbellus*
Gull, Ring-billed	*Larus delawarensis*
Hawk, Broad-winged	*Buteo platypterus*
Hawk, Cooper's	*Accipiter cooperii*
Hawk, Red-shouldered	*Buteo lineatus*
Hawk, Red-tailed	*Buteo jamaicensis*
Hawk, Sharp-shinned	*Accipiter striatus*
Heron, Great Blue	*Ardea herodias*
Heron, Green-backed	*Butorides striatus*
Hummingbird, Ruby-throated	*Archilochus colubris*
Jay, Blue	*Cyanocitta cristata*
Junco, Dark-eyed	*Junco hyemalis*
Kestrel, American	*Falco sparverius*
Killdeer	*Charadrius vociferus*
Kingbird, Eastern	*Tyrannus tyrannus*
Kingfisher, Belted	*Ceryle alcyon*
Kinglet, Golden-crowned	*Regulus satrapa*
Kinglet, Ruby-crowned	*Fegulus calendula*
Loon, Common	*Gavia immer*
Mallard	*Anas platyrhynchos*
Meadowlark, Eastern	*Sturnella magna*
Merganser, Common	*Mergus merganser*
Merganser, Hooded	*Lophodytes cucullatus*
Merlin	*Falco columbarius*
Night-Heron, Black-crowned	*Nycticorax nycticorax*
Nighthawk, Common	*Chordeiles minor*
Nuthatch, Red-breasted	*Sitta canadensis*
Nuthatch, White-breasted	*Sitta carolinensis*
Oriole, Northern	*Icterus galbula*
Osprey	*Pandion haliaetus*
Ovenbird	*Seiurus aurocapillus*
Owl, Barred	*Strix varia*
Owl, Boreal	*Aegolius funerous*
Owl, Great Horned	*Bubo virginianus*
Owl, Northern Saw-whet	*Aegolius acadicus*
Parula, Northern	*Parula americana*
Phoebe, Eastern	*Sayornis phoebe*
Pintail, Northern	*Anas acuta*
Raven, Common	*Corvus corax*
Redstart, American	*Setophaga ruticilla*
Robin, American	*Turdus migratorius*
Sandpiper, Spotted	*Actitis macularia*
Sandpiper, Upland	*Bartramia longicauda*
Sapsucker, Yellow-bellied	*Sphyrapicus varius*
Scaup, Lesser	*Aythya affinis*
Screech-Owl, Eastern	*Otus asio*
Shrike, Northern	*Lanius excubitor*
Siskin, Pine	*Carduelis pinus*
Snipe, Common	*Gallinago gallinago*
Sora	*Porzana carolina*
Sparrow, Chipping	*Spizella passerina*
Sparrow, Field	*Spizella pusilla*
Sparrow, Grasshopper	*Ammodramus savannarum*
Sparrow, House	*Passer domesticus*
Sparrow, Savannah	*Passerculus sandwichens*
Sparrow, Song	*Melospiza melodia*
Sparrow, Swamp	*Melospiza georgiana*
Sparrow, Vesper	*Pooecetes gramineus*
Sparrow, White-throated	*Zonotrichia albicollis*
Starling, European	*Sturnus vulgaris*
Swallow, Bank	*Riparia riparia*
Swallow, Barn	*Hirundo rustica*
Swallow, Northern Rough-winged	*Stelgidopteryx serripenr*
Swallow, Tree	*Tachycineta bicolor*
Swan, Mute	*Cyngus olor*
Tanager, Scarlet	*Piranga olivacea*
Teal, Blue-winged	*Anas discors*
Teal, Green-winged	*Anas crecca*
Thrasher, Brown	*Toxostoma rufum*
Thrush, Hermit	*Catharus guttatus*
Thrush, Swainson's	*Catharus ustulatus*
Thrush, Wood	*Hylocicla mustelina*
Titmouse, Tufted	*Parus bicolor*
Towhee, Rufous-sided	*Pipilo erythrophthalmus*
Turkey, Wild	*Meleagris gallopavo*
Veery	*Catharus fuscescens*
Vireo, Red-eyed	*Vireo olivaceus*
Vireo, Solitary	*Vireo solitarius*
Vireo, Warbling	*Vireo gilvus*
Vulture, Turkey	*Cathartes aura*
Warbler, Bay-breasted	*Dendroica castanea*

Warbler, Black-and-white	*Mniotilta varia*
Warbler, Black-throated Blue	*Dendroica caerulescens*
Warbler, Black-throated Green	*Dendroica virens*
Warbler, Blackburnian	*Dendroica fusca*
Warbler, Canada	*Wilsonia canadensis*
Warbler, Cape May	*Dendroica tigrina*
Warbler, Chestnut-sided	*Dendroica pensylvanica*
Warbler, Golden-winged	*Vermivora crysoptera*
Warbler, Magnolia	*Dendroica magnolia*
Warbler, Mourning	*Oporornis philadelphia*
Warbler, Nashville	*Vermivora ruficapiulla*
Warbler, Palm	*Dendroica palmarum*
Warbler, Pine	*Dendroica pinus*
Warbler, Tennessee	*Vermivora peregrina*
Warbler, Yellow	*Dendroica petechia*
Warbler, Yellow-rumped	*Dendroica coronata*
Waterthrush, Louisiana	*Seiurus motacilla*
Waxwing, Cedar	*Bombycilla cedrorum*
Whip-poor-will	*Caprimulgus vociferus*
Wood-Pewee, Eastern	*Contopus virens*
Woodcock, American	*Scolopax minor*
Woodpecker, Downy	*Picoides pubescens*
Woodpecker, Hairy	*Picoides villosus*
Woodpecker, Pileated	*Dryocopus pileatus*
Woodpecker, Red-bellied	*Melanerpes carolinus*
Woodpecker, Red-headed	*Melanerpes erythrocephal*
Wren, Marsh	*Cistothorus palustris*
Wren, Winter	*Troglodytes troglodytes*
Yellowthroat, Common	*Geothlypis trichas*

MAMMALS

Badger	*Taxidea taxus*
Bear, Black	*Ursus americanus*
Beaver	*Castor canadensis*
Bobcat	*Felis rufus*
Cat, domestic	*Felis catus*
Chipmunk, Eastern	*Tamias striatus*
Cottontail, Eastern	*Sylvilagus floridanus*
Deer, White-tailed	*Odocoileus virginianus*
Dog, domestic	*Canis familiaris*
Fox, Red	*Vulpes vulpes*
Gopher	*Geomys spp.*
Hare, snowshoe	*Lepus americanus*
Mink	*Mustela vison*
Mouse, Deer	*Peromyscus maniculatus*
Mouse, Meadow	*Microtus pennsylvanicus*
Mouse, White-footed	*Peromyscus leucopus*
Muskrat	*Ondatra zibethicus*
Opossum, Virginia	*Didelphis virginiana*
Porcupine	*Erethizon dorsatum*
Raccoon	*Procyon lotor*
Skunk	*Mephitis mephitis*
Squirrel, Eastern Fox	*Sciurus niger*
Squirrel, Eastern Gray	*Sciurus carolinensis*
Squirrel, Northern Flying	*Glaucomys sabrinus*
Squirrel, Red	*Tamiasciurs hudsonicus*
Squirrel, 13-lined ground	*Spermophilus tridecemlineatus*
Vole, Meadow	*Microtus pennsylvanicus*
Vole, Woodland	*Microtus pinetorum*
Weasel	*Mustela spp.*
Weasel, Longtail	*Mustela frenata*
Woodchuck	*Marmota monax*

OTHER VERTEBRATES

Bass, Rock
Bass, Largemouth
Bass, Smallmouth
Bluegill
Bullhead, Black
Golden shiner
Minnows, misc. species
Perch, yellow
Pike, Northern
Pumpkinseed
Sucker, White
Trout, Brown
Trout, Brook

TURTLES

Eastern Box	*Terrapene carolina carolina*
Painted	*Chrysemys picta*
Snapping	*Chelydra serpentina*
Spotted (?)	*Clemmys guttata*
Wood	*Clemmys insculpta*

LIZARDS

Skink, Five-lined	*Eumeces fasciatus*

APPENDIX "D"

WILDLIFE VALUES

WILDLIFE VALUES

Definitions (Bailey 1984):

1) **COMMERCIAL** "The commercial value of wildlife is the capitalized value of the income derived from selling or trading animals or their products, or from conducting a business based on access to wildlife populations."

2) **RECREATIONAL** "People derive benefits of pleasure, adventure, and enhanced physical and mental health from outdoor activities involving the pursuit or sometimes accidental enjoyment of wildlife. These people are hunters, trappers, fishermen, bird-watchers, photographers, hikers, campers and tourists of all kinds."

3) **BIOLOGICAL** "The value of wild animals to productive ecosystems. Wildlife are part of the complex biotic 'machinery' of ecosystems that we rely on for food, water, fertilizer and aesthetic and recreational values. The activities of wildlife in enhancing the productivity and stability of ecosystems are an enormous service to man. These services include soil tillage; pollination; seed dispersal and planting; natural regulation of plant and animal populations, including culling of diseased or inferior animals by predators;regulation of water resources; nutrient concentration, transportation and recycling; and sanitation through scavenging."

4) **SCIENTIFIC, PHILOSOPHICAL, AND EDUCATIONAL** "The scientific value of wildlife is the value of wild populations as objects of scientific study. The results are valuable to science and also to philosophy because wildlife ecology is the study of life and serves as one basis for speculation on human purposes, values, ethics, and destinies. The educational value of wildlife is realized in the use of wildlife examples in schools and at nature centers and park exhibits to enhance people's understanding of their environment. The philosophical and educational value of wildlife may be critical to developing an ecological and evolutionary ethic, which some people propose is the only solution to man's environmental problems."

5) **AESTHETIC** "The value of wildlife and their habitats as objects of beauty or historical significance, and as they become part of literature, poetry, art, and music, is the most personal and variously conceived of wildlife values. Aesthetic values are un-quantifiable yet, for many, is essential to the quality and even the perception of life. Aesthetic values increase with understanding."

6) **SOCIAL** "When individuals realize commercial, recreational and aesthetic values from wildlife, there is additional value realized by the community they live in and everyone in the community benefits. Through the multiplier effect, the community as a whole improves its economic base when money is spent on wildlife-oriented outdoor recreation. An individual's physical and mental health, enhanced by participating in outdoor recreation, is of value not only to oneself, but also to one's neighbors. If individuals are healthy and happy, they are not likely to add to community welfare costs for medical aid, income support, or counseling; nor are they apt to be involved in crimes against the community."

7) **NEGATIVE** "The negative values of wildlife are the costs of wildlife damages to crops and other property and the costs of controlling those damages. Forms of negative values include tree seedling browsing by deer; crop damages by a variety of animals; beaver flooding; coyote predation...etc..

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Fisheries Division

FISH COLLECTION (CON'T

Water BROWN BRIDGE POND T. ____ R. ____ Sec. ____ Date 6/23/86 TO 6/27/86

County GRAND TRAVERSE I.D. ____ Sheet 3 of 3

Summary of: (X) All sites ( ) Coll. site No. ____ ( ) Index site No. ____ (X) All gear (X) Gear ING, LMF, SMF

Species	WHITE SUCKER		GOLDEN SHINER											
Gear	SMF		SMF											
Lengths	11.7		3.5											
Avg. Wt.	1.42		0.01											
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	110	156	64	0.6										
%	51	90	29	0.3										
CPE	27	39	16.0	0.2										
% L-A														
Inches 1	107													
2	30	0.4	64	0.6										
3	10													
4														
5														
6														
7														
8														
9	1	0.3												
10														
11														
12														
13														
14	3	3.6												
15	2	1.9												
16	6	10.6												
17	5	10.4												
18	14	34.7												
19	14	40.6												
20	9	30.4												
21	6	23.3												
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
Sample total	110	156	64	0.6										

LENGTH-FREQUENCY & LENGTH-BIOMASS SAMPLE

R-8070 4/81

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

FISH GROWTH ANALYSIS

Water BROWN BRIDGE POND T. 26N R. 10W Sec. 14, 15

County GRAND TRAVERSE Id.

Collection Date 6/23/86 TO 6/27/86

Gear and Methods INLAND GILL NET, LARGE MESH FYKE NET, SMALL MESH FYKE NET

Collected By JAN SAPAK Section D-6 MGNT Aged By STEVE LAZAR Section D-6 MGNT

Species ↓	Age Group ↓	Number of fish	Lenth range in inches	Mean length in inches	State avg. length	Growth index (by age group)	Mean growth index for species
ROCK BASS	3	7	3.9 - 5.7	4.8	5.4	-0.6	
"	4	11	4.3 - 6.4	5.6	6.4	-0.8	
"	5	19	5.5 - 7.9	6.3	7.2	-0.9	
"	6	8	6.5 - 8.8	7.2	8.1	-0.9	
"	7	5	7.4 - 9.3	8.2	8.8	-0.6	
"	8	1	8.8	8.8	9.4		-0.8
YELLOW PERCH	1	6	2.8 - 3.8	3.1	4.0	-0.9	
"	2	2	4.7 - 6.1	5.4	5.7		
"	3	4	5.7 - 6.3	6.0	6.8		
"	4	10	5.5 - 7.7	6.3	7.8	-1.5	-1.2
"	5	2	6.4 - 6.9	6.6	8.7		
"	6	4	7.5 - 10.0	8.6	9.7		
SMALLMOUTH BASS	5	1	14.7	14.7	14.7		
"	6	3	14.3 - 14.9	14.6	15.5		
LARGEMOUTH BASS	3	2	12.4 - 12.8	12.6	10.6		
"	4	2	12.5 - 14.1	13.3	13.0		

↓ Several species may be listed on one sheet.
↓ Age in years. Fish become one year older on January 1.

(over)

CATCH SUMMARY BY GEAR Gear = _____ or as indicated

Species	ROCK BASS		WHITE SUCKER		NORTHERN PIKE		BLUEGILL		ROCK BASS		YELLOW PERCH		BLACK BULLHEAD	
Gear	LMF		LMF		SMF		SMF		SMF		SMF		SMF	
Lengths	6.5		17.9		21.5		3.5		6.3		3.8		6.0	
Wt.	0.20		2.30		2.32		--		0.20		0.02		0.10	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	53	11.5	134	306	5	11.6	1	--	26	5.2	9	0.2	2	0.2
%	22	3	55	88	2	7	0.3	--	12	3	4	0.1	0.9	0.1
CPE	4.4	1.0	11.2	25	1.2	2.9	--	--	6.5	1.3	2.2	--	0.5	--
% L-A	87				80		0		62		0			
Inches														
1														
2											3	--		
3							1	--			3	--		
4									2	0.1	1	--		
5	19	2.3							11	1.3	1	0.1	1	0.1
6	16	3.2							5	1.0	1	0.1	1	0.1
7	15	4.6							7	2.2				
8	3	1.4												
9									1	0.6				
10			1	0.5										
11			1	0.6										
12														
13														
14			2	2.4										
15			8	11.7	1	0.8								
16			28	49.3										
17			28	58										
18			33	82										
19			23	67										
20			8	27.0	1	1.8								
21			2	7.8										
22					1	2.5								
23					1	2.8								
24														
25					1	3.7								
26														
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
Sample total	53	11.5	134	306	5	11.6	1	--	26	5.2	9	0.2	2	0.2

LENGTH-FREQUENCY & LENGTH-BIOMASS SAMPLE

Record average length or range in length of fish.

Total % = percent contribution of the species to the total catch in the gear.

L-A = Legal- or acceptable- size game fish: bluegill, sunfish, rock bass-6"+ ; crappie, perch, bullhead-7"+ ; bass-12"+ ; walleye-15"+ ; pike-2
- muskie-30"+ ; trout-7"+ in U.P. streams, 8"+ in L.P. streams, 10"+ in lakes.

*OR:

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Fisheries Division

FISH COLLECTION (CON'T

Water BROWN BRIDGE POND T. 26N R. 10W Sec. 14, 15 Date 6/23/86 TO 6/27/86

County GRAND TRAVERSE I.D. Sheet 2 of 3

Summary of: (X) All sites ( ) Coll. site No. ( ) Index site No. (X) All gear (X) Gear ING, LMF, SMF

Species	WHITE SUCKER		BLACK BULLHEAD		BLUEGILL		NORTHERN PIKE		LARGEMOUTH BASS		YELLOW PERCH		PUMPKINSEED	
Gear	IGN		IGN		LMF		LMF		LMF		LMF		LMF	
Length	16.7		5.5		6.3		17.2		12.7		7.0		6.3	
Avg. Wt.	1.96		0.10		0.20		1.30		1.00		0.20		0.20	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
Total	61	120	1	0.1	18	2.8	15	19.8	5	5.3	2	0.3	16	2.9
%	46	73	1	--	7	1	6	6	2	2	1	0.1	7	0.8
CPE	3.4	6.6	--	--	1.5	0.2	1.2	1.6	0.4	0.4	0.2	--	1.3	0.2
% L-A			0		72		20		100		50		56	

LENGTH-FREQUENCY & LENGTH-BIOMASS SAMPLE

Inches	WHITE SUCKER No.	WHITE SUCKER Lb.	BLACK BULLHEAD No.	BLACK BULLHEAD Lb.	BLUEGILL No.	BLUEGILL Lb.	NORTHERN PIKE No.	NORTHERN PIKE Lb.	LARGEMOUTH BASS No.	LARGEMOUTH BASS Lb.	YELLOW PERCH No.	YELLOW PERCH Lb.	PUMPKINSEED No.	PUMPKINSEED Lb.
1														
2														
3													3	0.2
4													5	0.7
5			1	0.1	5	0.1					1	0.1	8	1.8
6					11	2.1					1	0.2	1	0.2
7					2	0.6								
8														
9														
10														
11	3	1.8					2	0.6						
12	6	4.6					1	0.4	4	4.0				
13	3	2.9							1	1.3				
14	6	7.1					3	1.9						
15	2	2.9												
16	6	10.6												
17	8	16.7					3	3.4						
18	16	39.7					2	2.7						
19	8	23.2					1	1.6						
20	3	10.1					1	1.8						
21							1	2.2						
22														
23														
24														
25														
26														
27														
28							1	5.2						
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
Sample total	61	120	1	0.1	18	2.8	15	19.8	5	5.3	2	0.3	16	2

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Fisheries Division

FISH COLLECTION

ater BROWN BRIDGE POND

ty GRAND TRAVERSE T. 26N R. 10W Sec. 14, 15 Date 6/23/86 TO 6/27/86

I.D. Sheet 1 of 3

ary of: (X) All sites ( ) Coll. site No. ( ) Index site No. (X) All gear (X) Gear LMF, IGN, SMF

ple site(s): Number of 15 Depth Range 0-29' Temperature range

Location(s) (describe or map below):

r (abundance, type): SUBMERGED LOGS, WEED BEDS, REEDS

foods: SUCKER FRY, SHINERS, CLAMS, SNAILS, MAYFLY HATCH, LEECHES

r clarity, level, etc.: CLEAR, NORMAL - LEVEL FLUCTUATES DUE TO DAM Cond.: Electro. eff.:

eather: Present SUNNY BREEZY Preceding PARTLY CLOUDY

emperature: Air 26°C Water surface 20°C Time of day 12:40

am: Length Avg. width Avg. depth

Velocity: Ave. Surface Discharge

Bottom type:

Description: IGN-125' EXPERIMENTAL INLAND GILL NET OF 1½",2",2½",3",& 4" STRETCH MEASURE; LMF-RGE MESH FYKE NET 2" STRETCH MEASURE; SMF-SMALL MESH FYKE NET 3/8" BAR MEASURE.

ffort: Net liftsING-18,LMF-9,SMF-3 Net nightsIGN-18,LMF-12,SMF-4 Area covered Hours shocked

urpose of collection: ROUTINE INVENTORY AS OUTLINED IN RECENT FISH MANAGEMENT PLAN FOR THE BOARDMAN VER SYSTEM.

ata collected (✓): (✓) CATCH SUMMARY (✓) LENGTH-FREQUENCY (✓) LENGTH-BIOMASS ( ) LENGTH-WEIGHT REGRESSION
(✓) GROWTH ( ) MARK & RECAPTURE ESTIMATES ( ) AGE-FREQUENCY & SURVIVAL

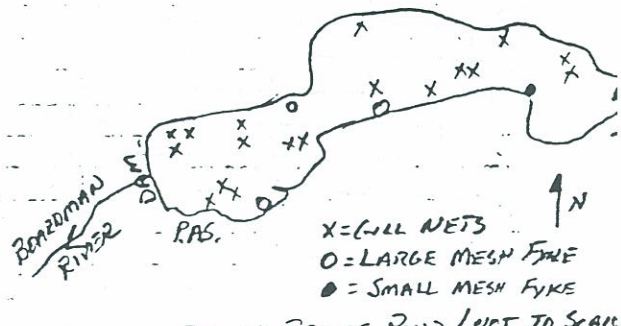
ysis, map, remarks, fishing reports: A total of 11 different species were collected during this survey. Seven brown trout were collected in the gill nets and averaged 16.9 inches long. Most were cted in water less than 15 feet deep. A total of 29 northern pike (averaging 18.5 inches) collected. They were growing very slowly compared to the state average. Rock bass are abundant, averaging 6.4 inches. Bass and panfish were sparse, but exhibited average to good growth and size. Bluegill and pumpkinseed in the 7 inch class were taken. Also several bass the 14 inch range. Yellow perch averaged 6.7 inches. White suckers and golden shiners were very abundant. Sucker fry observed around the shoreline.

FOLD HERE

In general, the population of game fish appears adequate for a reservoir of this size. What e reservoir lacks in quantity is compensated for in quality. The only exception being northern pike which average smaller (and growing slower) than expected. Anglers report good fishing for pike, brown trout and smallmouth bass. Anglers catching perch during the survey.

ack spot present on pike, rock bass and pumpkinseed. Small mayfly hatch. Snapping and painted turtles, swans, geese, loons and beaver present.

st fish collected from water depths less than 15 feet. Fish in deeper water were suspended.



BROWN BRIDGE POND / NOT TO SCALE

alysis by Ralph Hay Sec. MGNT. D-6

ection by J. Sapak Sec. D-6 MGNT Identification by J. Sapak Sec. D-6 MGNT

Andy Westmaas
Scott Conradson

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R605
Rev. 3/8

pecies	BROWN TROUT		BLUEGILL		NORTHERN PIKE		SMALLMOUTH BASS		LARGEMOUTH BASS		ROCK BASS		YELLOW PERCH	
ear	IGN		IGN		IGN		IGN		IGN		IGN		IGN	
ength	16.9		7.0		19.2		14.5		14.5		6.1		7.7	
vg. Wt.	1.84		0.25		1.57		1.55		1.60		0.18		0.22	
	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.	No.	Lb.
otal	7	12.9	2	0.5	8	12.7	4	6.2	1	1.6	25	4.6	25	5.4
%	5	8	1	0.2	6	8	3	4	1	1	19	3	19	3
PE	0.4	0.7	0.1	--	0.4	0.7	0.2	0.3	--	--	1.4	0.3	1.4	0.3
L-A	100		100		36		100		100		56		56	
Inches														
1														
2														
3											1	--		
4											1	0.1		
5											9	1.1	5	0.3
6			1	0.2							10	2.0	7	0.8
7			1	0.3							3	0.9	3	0.5
8											1	0.5		
9													9	3.3
10													1	0.5
11														
12														
13														
14	2	2.2			1	0.6	4	6.2	1	1.6				
15	1	1.3												
16	2	3.2			1	0.9								
17														
18														
19					3	4.7								
20	2	6.2			1	1.8								
21					1	2.2								
22					1	2.5								
23														
24														
25														
26														
27														
28														
29														
30														
31														
32									1	1.6	25	4.6	25	5.4
33														
34														
35														
36														
37														
38														
39														
40														
Sample total	7	12.9	2	0.5	8	12.7	4	6.2						

LENGTH-FREQUENCY & LENGTH-BIOMASS SAMPLE

ALL SPECIES TOTAL

Gear	No.	Lb.
IGN	134	164
SMF	217	174
LMF	243	349

- Record average length or range in length of fish.
- Total % = percent contribution of the species to the total catch in the gear.
- L-A = Legal- or acceptable- size game fish: bluegill, sunfish, rock bass-6"+ ; crappie, perch, bullhead-7"+ ; bass-12"+ ; walleye-15"+ ; pike-20"+ muskie-30"+ ; trout-7"+ in U.P. streams, 8"+ in L.P. streams, 10"+ in lakes.

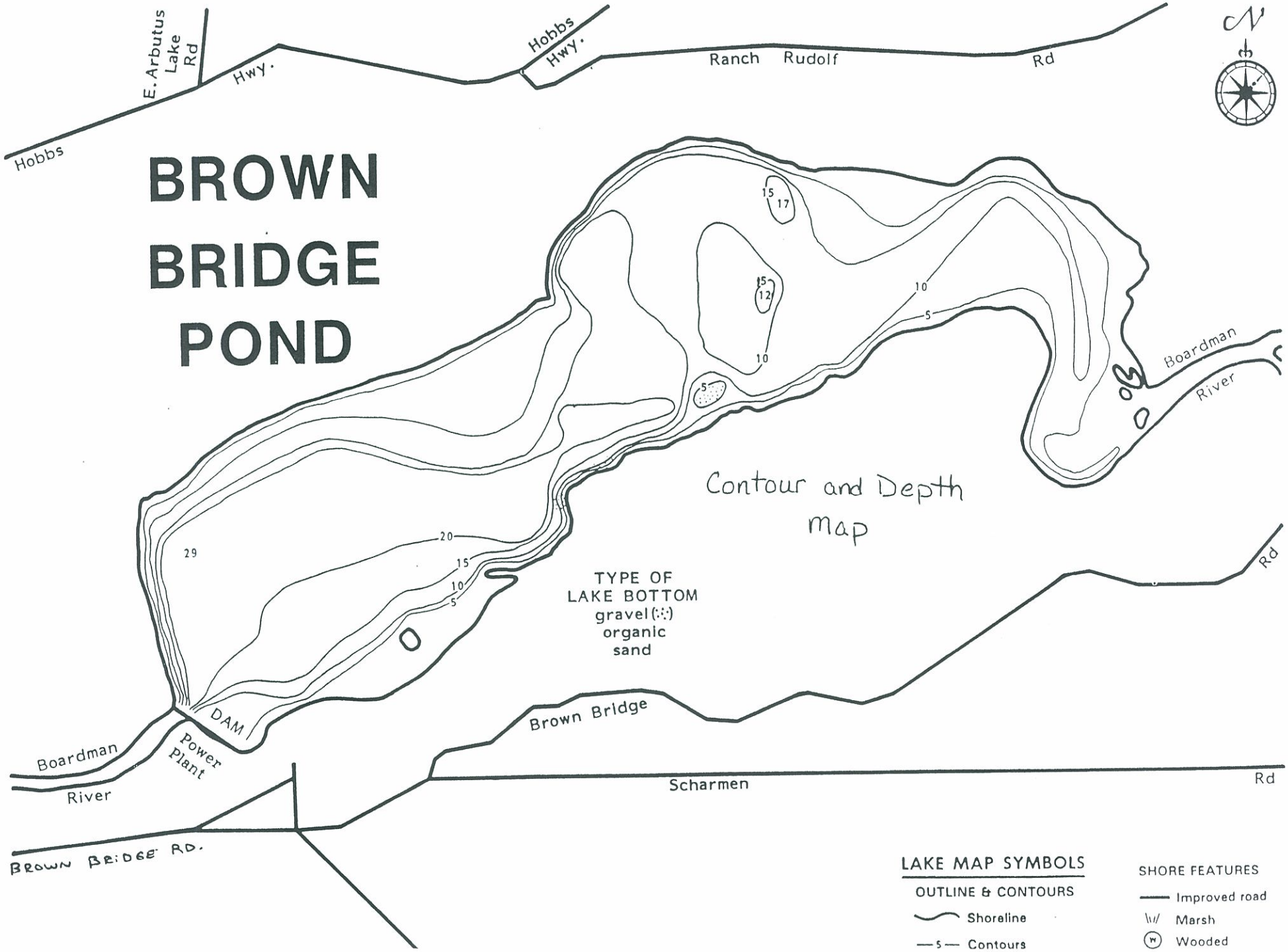
*OR:

; Inch groups: 1=1.0-1.9, 2=2.0-2.9, etc.

APPENDIX "E"

DEPTH CONTOURS (MAP)

MDNR FISH ABUNDANCE SURVEY AND COMMENTS


BROWN BRIDGE POND
Contour and Depth map
Hobbs
E. Arbutus Lake Rd
Hwy.
Hobbs Hwy.
Ranch Rudolf Rd
N
Boardman River
Rd
Brown Bridge
Scharmen Rd
DAM
Power Plant
Boardman River
BROWN BRIDGE RD.
TYPE OF LAKE BOTTOM
gravel
organic
sand
29
20
15
10
5
15
17
15
12
10
5
10
5
LAKE MAP SYMBOLS
OUTLINE & CONTOURS
Shoreline
Contours
SHORE FEATURES
Improved road
Marsh
Wooded

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Fisheries Division

R8063
4/81

Lake BROWN BRIDGE POND

County GRAND TRAVERSE

T. 26N R. 10W Sec. 14,15

Id.

LAKE SURVEY SUMMARY

1. Other names of lake
2. Accessibility (how reached, condition of roads) CO. ROAD 616 NORTH OF MAYFIELD TO RIVER RD. TO CITY OF TRAVERSE CITY ACCESS SITE BY DAM
3. Outlet (immediate and main drainage) BOARDMAN RIVER
   Permanency | Size
4. Dam in outlet YES | Distance from lake ADJACENT TO DAM | Height 18 FT.
   Effect on level | Owner TRAVERSE CITY | Use HYDRO-ELECTRIC
   Effect on fish movements COMPLETELY STOP ANY UPSTREAM MOVEMENT
5. Inlets (name, size) BOARDMAN RIVER
   Drainage area
6. Pollution (kind, source, severity) ORGANIC MATERIAL & SAND FROM RIVER SEDIMENTS
7. Shoreline type (%): Bog | Swamp | Marsh | Upland
8. Surrounding country (topography, soil, cover) UPLANDS, SANDY SOILS HARDWOODS
9. Use (private, public, semi-private) PUBLIC | Public fishing site YES
10. Approximate number Cottages | Resorts | Boat Liveries
11. Intensity of fishing (heavy, medium, light, or angler days) Summer MEDIUM | WINTER - LIGHT
12. Other uses
13. Area 180 ACRES | Shore Development | Maximum depth
14. Area of Vegetation (acres) | Per cent shoal (less than 15 ft.)
15. Slope at drop-off (gradual, steep)
16. Bottom Soil: | Shoal | Deep water
17. Color | Secchi disk (range)
18. Temperature (range): Surface | Bottom
19. Thermocline | Location | Temperature (range)
20. Dissolved oxygen (range): Above thermocline (in upper 20 feet if absent)
    In Thermocline | Below thermocline (near bottom if absent)
    Depth range where temperature is below 70° F., and O_2 above 4 ppm. | Oxygen-thermal type
21. pH (range) | CO_2

Copies to: Lansing ( ), Region ( ), District ( ), I.F.R. ( )

(Over)

22. Cover (kind, abundance)

23. Vegetation (type, abundance)

24. Food (abundance, dominant organisms): Plankton FRESHWATER CRUSTACEANS; SCUDS

Bottom: Shoal WHITE SUCKER FRY, CRAYFISH DAMSELFLY NYMPHS | Depths SUCKER FRY (ABUNDANT)

Vegetation: LEECHES, AQUATIC INSECTS

25. Spawning grounds (summarize observations and reports) SOME GRAVEL AREAS, WEEDY SHALLOW AREA, ACCESS TO RIVER SPAWNING AREAS

26. Predators (kind and abundance) KING FISHERS, WATER SNAKE, PIKE, SMB, LMB, MALLARDS, SEAGULLS, SWANS

27. Fish parasites BLACKSPOT ON NOP AND ROCK BASS

Fish mortalities (observed or reported)

28. Fishing: general reputation LOCAL FISHERMAN SAY GOOD CATCHES OF PIKE, BROWN TROUT AND SMALL MOUTH BASS

History | Reported by

29. Recent stocking

30. Fish species	Abundance	Predominant size	Growth rate (poor, average, good)
ROCK BASS	ABUNDANT	5" TO 8"	AVERAGE
YELLOW PERCH	SPARSE	5" TO 7"	POOR
SMALL MOUTH BASS	SPARSE	14"	AVERAGE
LARGE MOUTH BASS	SPARSE	12" TO 14"	AVERAGE
NORTHERN PIKE	COMMON	14" TO 19"	VERY POOR
BLUEGILL	SPARSE	5" TO 7"	GOOD
PUMPKINSEED	SPARSE	5" TO 6"	AVERAGE
WHITE SUCKERS	VERY ABUNDANT	16" TO 19"	
BLACK BULLHEAD	SPARSE	5" TO 6"	
BROWN TROUT	SPARSE	14" TO 6"	GOOD
GOLDEN SHINER	ABUNDANT	3"	

Continuations (use item numbers):

Prepared by STEVE LAZAR | Section D-6 MGNT | Date of survey(s) 6/23 - 27/86

Species	Age Group	Number of fish	Lenth range in inches	Mean length in inches	State avg. length	Growth index (by age group)	Mean growth index for species
NORTHERN PIKE	1	4	11.0 - 15.4	12.7	14.4		
"	2	6	14.2 - 17.6	15.4	19.0	-3.6	
"	3	9	16.7 - 21.8	19.1	21.8	-2.7	
"	4	4	19.6 - 22.4	20.8	24.2		
"	5	1	20.9	20.9	26.1		
"	6	3	21.5 - 23.6	22.5	27.8		
"	7	2	25.6 - 28.5	27.0	30.0		-3.2
BLUEGILL	3	15	3.8 - 7.3	6.5	5.3	+0.8	
"	4	4	5.9 - 7.1	6.6	6.2		+0.8
BROWN TROUT	3	1	12.5	12.5	11.8		
"	4	3	14.5 - 16.0	15.0	14.8		
"	5	2	15.9 - 20.8	18.6	17.7		
"	6	1	20.5	20.5	20.8		
PUMPKINSEED	3	9	4.4 - 6.2	5.3	5.2	+0.1	
"	4	5	5.0 - 6.9	6.1	5.8	+0.3	
"	5	3	6.0 - 6.5	6.2	6.3		+0.2

Analysis: The northern pike are growing very poorly, i.e. significantly slower than the state average. Yellow perch and rock bass are also growing very slowly. On the other hand, bluegill exhibit very good growth and pumpkinseed satisfactory growth.

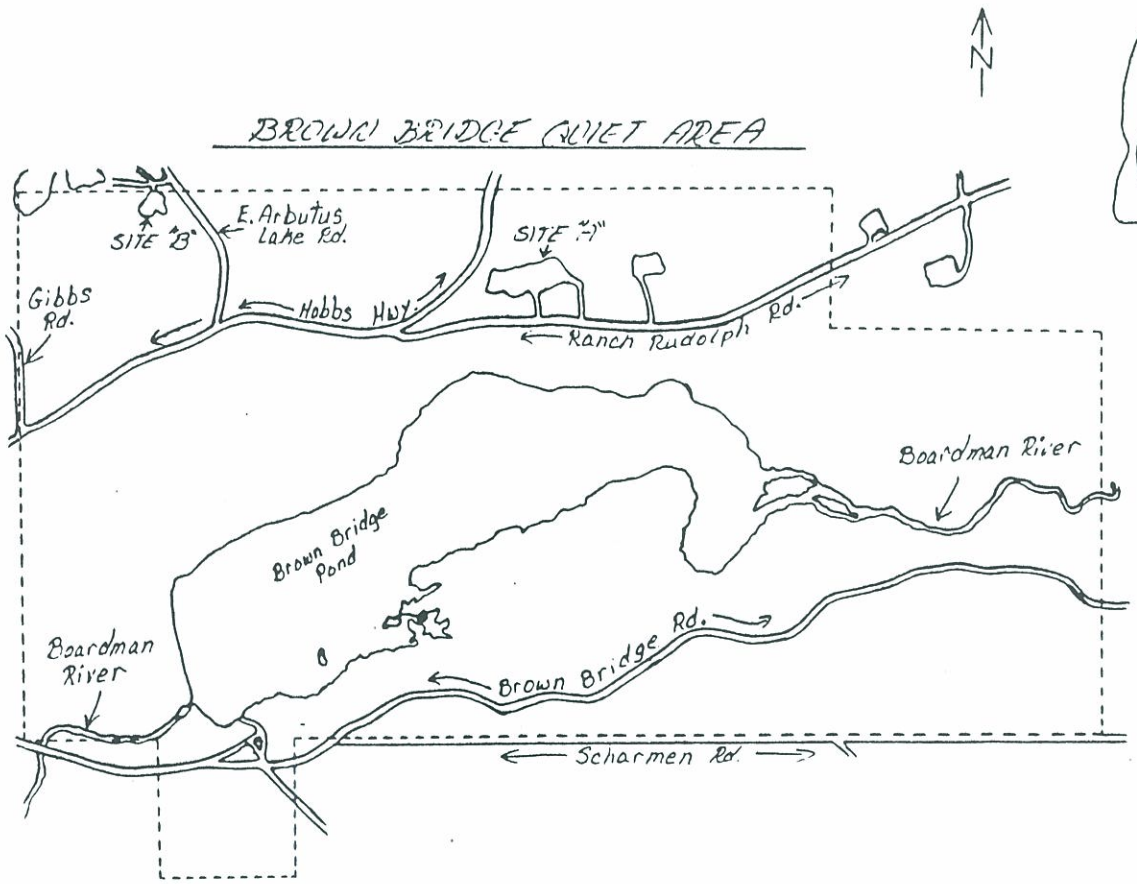
Prepared by Steve Lavar Section D-6 Mgnt Date 2/10/87

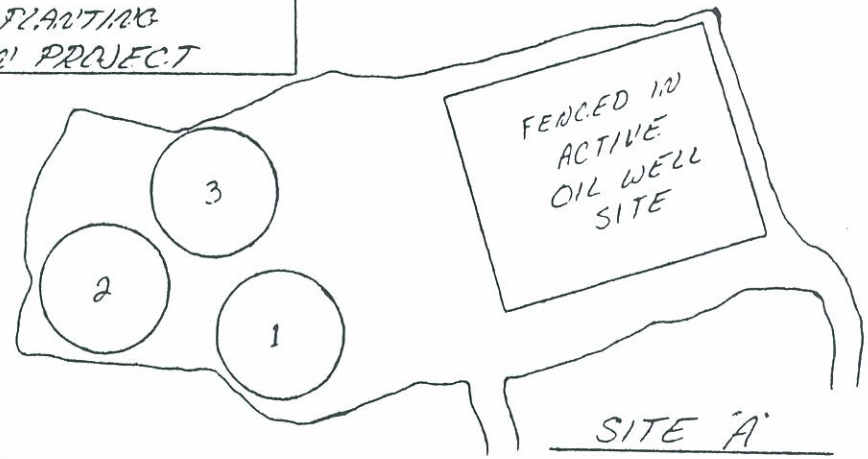
Copies to: ☐ Lansing, ☐ Region, ☐ District, ☐ I.F.R.

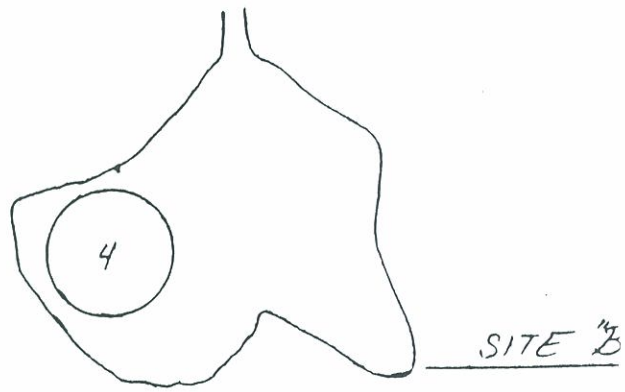
APPENDIX "F"

EXPERIMENTAL (NATIVE) SHRUB PLANTINGS

EXPERIMENTAL SHRUB PLANTING AND GROWTH OBSERVATION PROJECT







- - - - - Quiet Area Boundry	
═══ Paved or Gravel Roads	
~~ Water Boundries	

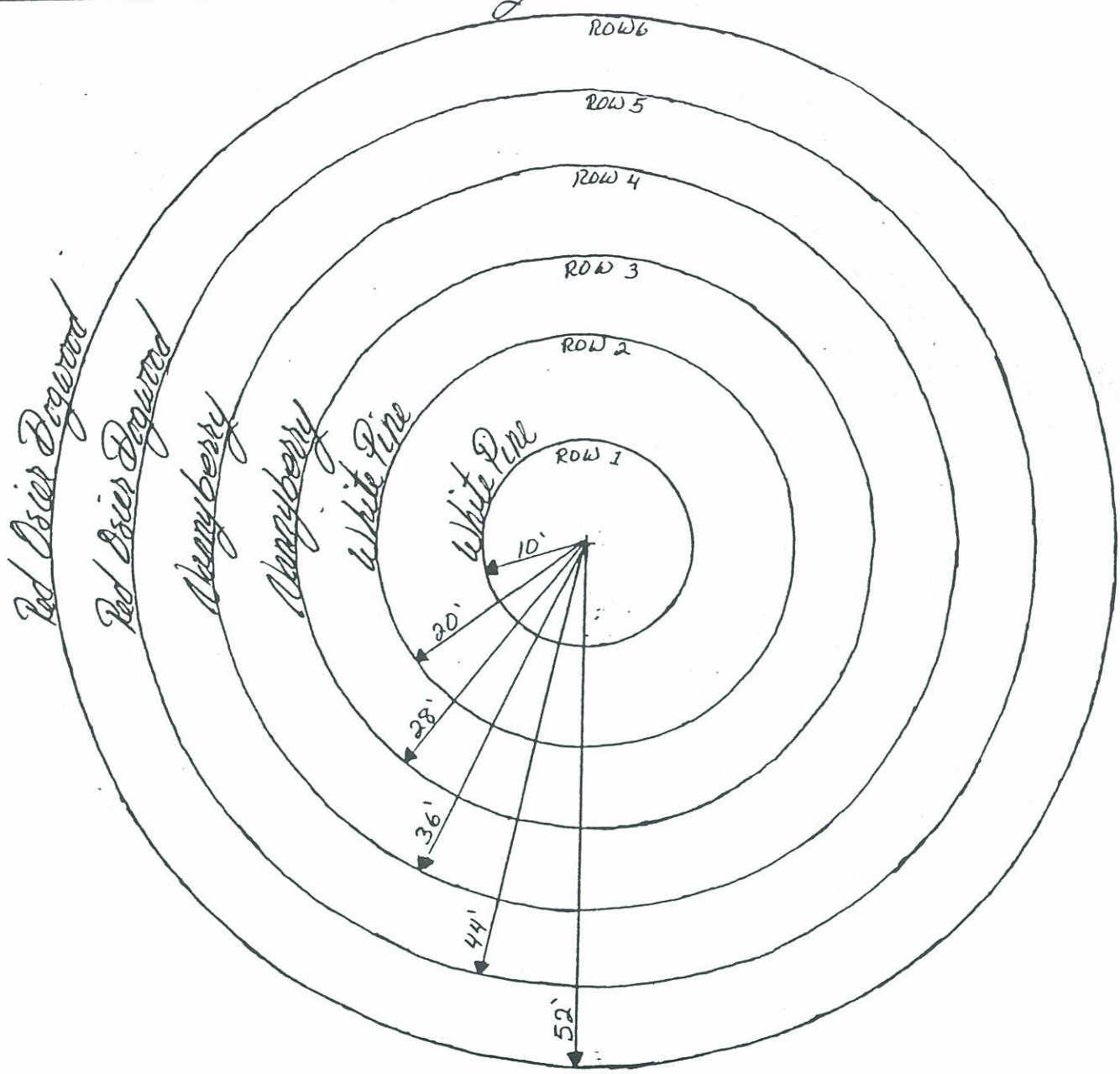
1, 2, etc.	Tree and Shrub Clumps
"A", "B", etc.	Planting Sites

Scale : Undetermined

Drafted by: Rick Courtemanche for Brown Bridge Quiet Area / April 1992

CIRCULAR CLUMP PLANTING PROJECT

PLANTING DATE: 4-15-92 | SITE LOCATION: Hatto Hwy (oil well site) | CLUMP # 1

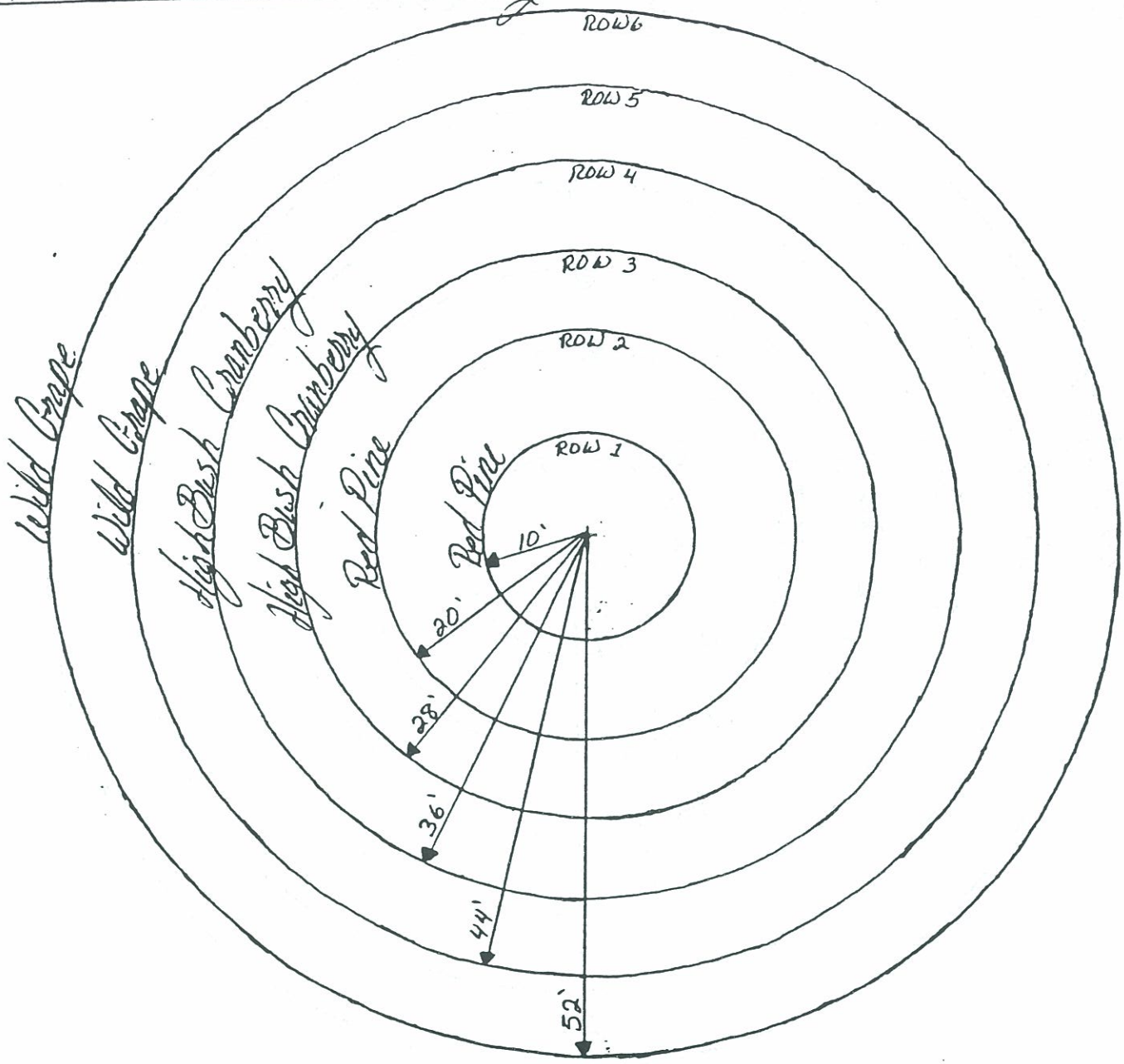


277 total plants

ROW #	QUANTITY	PLANT TYPE	SOIL TYPE	SPACING
1	9	White Pine	Compost	7'
2	18	White Pine	Sand	7'
3	43	Nannyberry	Compost	4'
4	56	Nannyberry	Sand	4'
5	69	Red Osier Dogwood	Compost	4'
6	82	Red Osier Dogwood	Sand	4'

CIRCULAR CLUMP PLANTING PROJECT

PLANTING DATE: 4-17-92 | SITE LOCATION: Hobbs Hay (oil well site) | CLUMP # 2

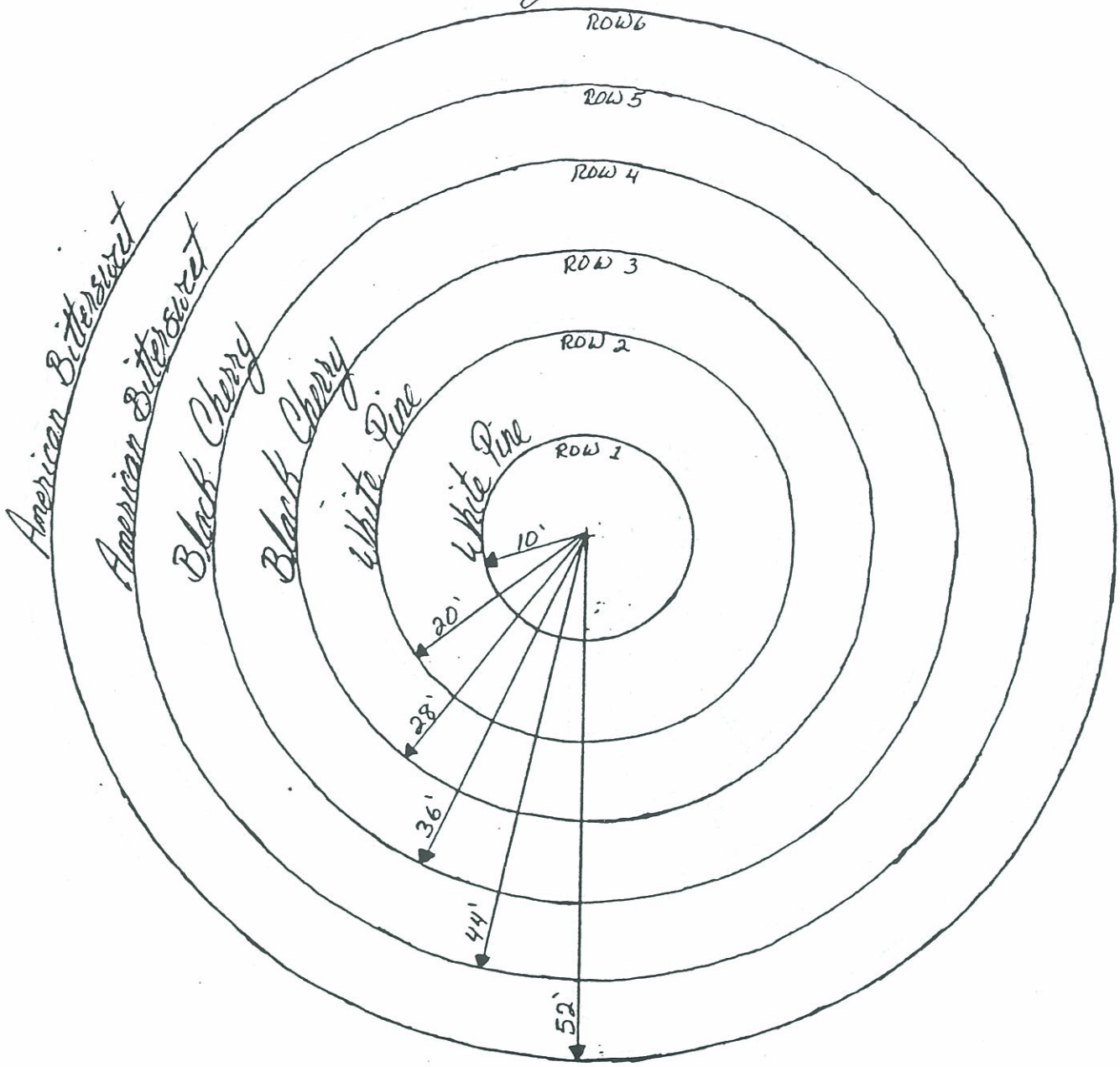


274 total plants

ROW #	QUANTITY	PLANT TYPE	SOIL TYPE	SPAC
1	9	Red Pine	Compost	7'
2	18	Red Pine	Sand	7'
3	44	High Bush Cranberry	Compost	4'
4	55	High Bush Cranberry	Sand	4
5	69	Wild Grape	Compost	4'
6	79	Wild Grape	Sand	4'

CIRCULAR CLUMP PLANTING PROJECT

PLANTING DATE: 4-17-92 | SITE LOCATION: Hobbs Hwy (oil well site) | CLUMP # 3

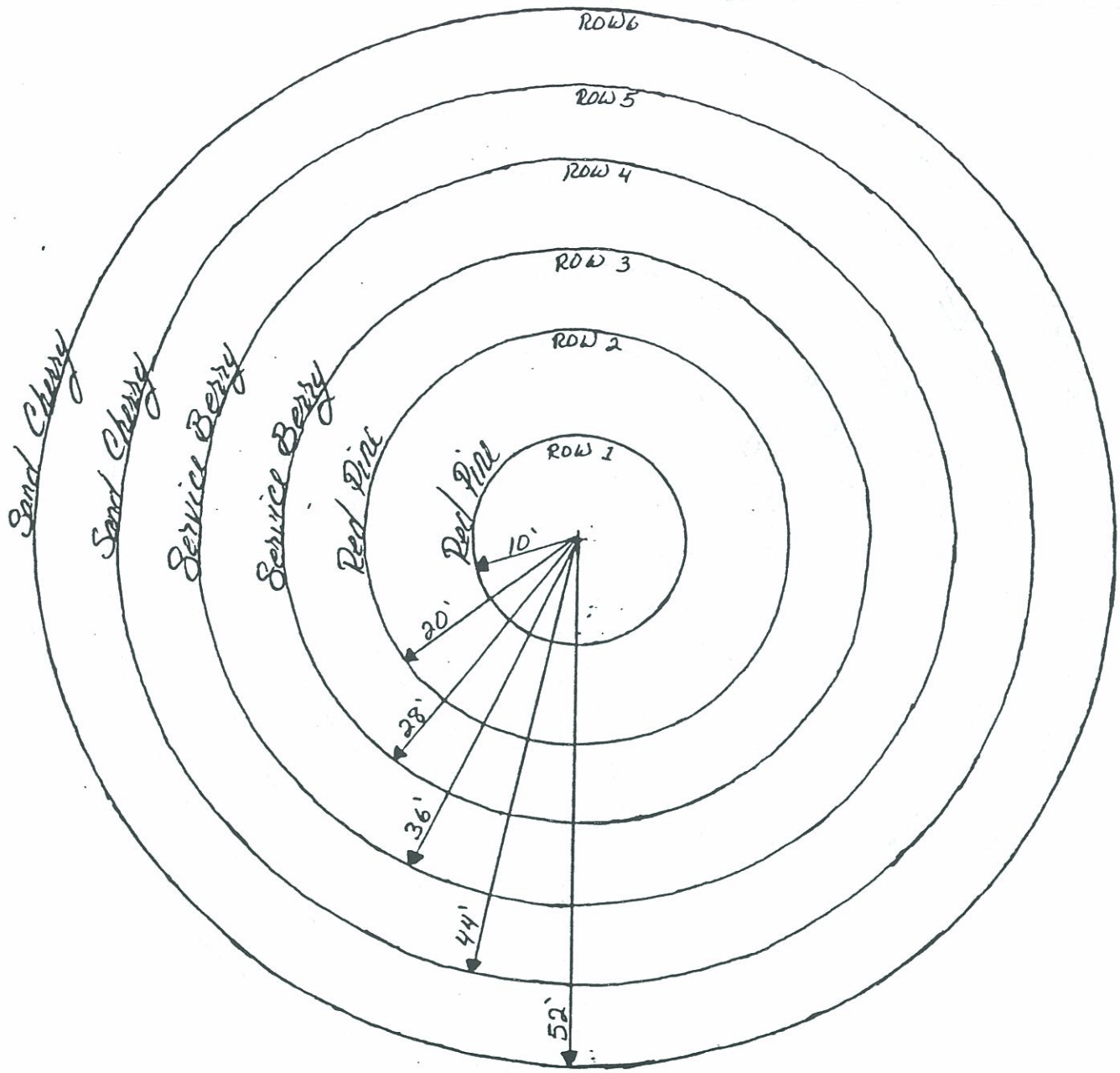


274 total plants

ROW #	QUANTITY	PLANT TYPE	SOIL TYPE	SPACI
1	9	White Pine	Compost	7'
2	17	White Pine	Sand	7'
3	43	Black Cherry	Compost	4'
4	56	Black Cherry	Sand	4'
5	68	American Bittersweet	Compost	4'
6	81	American Bittersweet	Sand	4'

CIRCULAR CLUMP PLANTING PROJECT

ANTING 4-21-92 / SITE LOCATION: E. Arbutus Lake Rd. (S. of new cut road) / CLUMP # 4



276 total plants

R. W #	QUANTITY	PLANT TYPE	SOIL TYPE	SPAC
1	10	Red Pine	compost	7
2	17	Red Pine	sand	7
3	44	Service Berry 10"-18"	compost	
4	56	Service Berry 10"-18"	sand	4'
5	68	Sand Cherry	compost	4'
6	81	Sand Cherry	sand	4'

APPENDIX "G"

GROUND WATER CLEAN UP

PART II

FIELD APPROACH TO ENHANCING THE SESSILE AND PLANKTONIC MICROORGANISM POPULATION IN SITU USING OXYGEN AND NUTRIENTS

SUMMARY

The volatile aromatic hydrocarbon compounds benzene, toluene, ethylbenzene, and xylenes (BTEX) impacted a unconfined aquifer; leaving 92 kg of dissolved phase and 21 kg of adsorbed phase hydrocarbons as carbon in situ. Mechanical recovery by conventional pumping has removed 51 kg of this hydrocarbon mass while the remaining 61 kg are being remediated.

Results of the PHASE I "Field and Laboratory Assessment of the Sessile and Planktonic Microorganism Population in the Presence and Absence of Oxygen and Nutrients for Aquifer Soil and Groundwater" were used to design the enhanced in situ bioremediation system. In situ treatment will be used to compliment the existing conventional mechanical pump and treat technology.

Recovery wells (5) remove groundwater containing dissolved phase volatile aromatic hydrocarbons from 172,000 square feet of contaminated aquifer. Purged water totaling a flow of 38-40 gpm is treated by a conventional counter current packed air stripping tower (AST). After treatment, water will be reinjected into 5 wells in the absence of nutrient to safe guard against aquifer permeability loss due to increase in cell mass. After 5 months of treated water injection this will be followed by 12 to 15 months of nutrient addition with 3 additional months of straight groundwater injection. The treated water will be air saturated with a dissolved oxygen concentration of approximately 10 mg/l.

Nutrient injection will include the compounds potassium nitrate "KNO3" and dihydrogen phosphate "KH2PO4" (or equivalent). The amended groundwater will then be reinjected at a total flow of 8 to 10 gpm through 5 recycling points. The remaining water recharges the aquifer out of the treatment zone area through a infiltration gallery.

Nutrient quantities added will be based on a carbon:nitrogen:-phosphorous ratio of 100:10:5. The hydrocarbon concentration average as BTEX in the aquifer is 4.6 ppm. Nitrogen will be added at 1 ppm NO3 and phosphorous will be added at 0.5 ppm PO4.

This paper details the background of the site and the process that will be taken to document the effectiveness of the enhanced in situ bioremediation system.

OBJECTIVES

The main objectives of the environmental remediation is to:

- Provide essential nutrients and oxygen responsible for enhancing the in situ biodegradation of hydrocarbon by microorganisms in there sessile and planktonic environment.

- Increase the efficiency of contaminant removal and in situ treatment of hydrocarbon in regions of low soil permeability (Hydraulic Conductivity < or = 15 ft/day).

- Document effectiveness of in situ enhancement through the periodic testing of hydrocarbon removal and viable sessile and planktonic microorganism populations.

- Calculate the nutrient uptake and oxygen usage rates by microorganisms in the aquifer.

- Field document groundwater mounding and flow rates as a function of aquifer hydraulics by region.

BACKGROUND

Natural gas is produced at oil well sites in a water saturated state. Prior to storage and transport, the produced gas is subjected to a dehydration process; whereby the gas is up flowed through the dehydrator while triehthylene glycol (TEG) is passed down through the tower. During this process, water with dissolved phase hydrocarbon, pass from the gaseous phase into the TEG. The TEG is then heated above the boiling point of water and driven off as a steam. The steam is partially condensed to water, through passive atmospheric cooling, and collected in a vessel. At this site the vessel lost its integrity. As a result water condensate migrated to the subsurface with concentrations of volatile aromatic hydrocarbons in the 100 ppm plus range.

The loss of hydrocarbon to the subsurface aquifer resulted in a contaminant mass that is distributed over an area of 172,000 square feet. The vertical distribution of contaminant ranges from 3 feet in perched zones to 25 feet in the thickest part of the saturated aquifer. The average thickness of the impacted aquifer is 5 to 10 feet.

CONCLUSION

The mechanical method of groundwater treatment at the Conoco Inc. St. East Bay # 2-14 well site is by Air Stripping. The stripped volatile aromatic hydrocarbons are then adsorbed in a Vapor Phase Granular Activated Carbon Bed; while treated groundwater will be used for in situ biological treatment by the addition of

nutrients in oxygenated water. Excess water is charged to an infiltration basin out of the treatment zone. Recycling of groundwater amended with nutrients will be monitored to insure a HYDRAULICALLY CLOSED LOOP SYSTEM.

Groundwater recovery has been in operation at the St. East Bay # 2-14 well site since November of 1990. The recovery operation has removed approximately 50 kg (40-50 %) of volatile aromatic hydrocarbons (Benzene, Toluene, Ethylbenzene, Xylenes; BTEX) from the dissolved phase of the contaminant area. The remaining hydrocarbon present in the dissolved and adsorbed phase of the aquifer system is estimated at 40 kg and 20 kg respectively.

Five recovery wells are removing groundwater containing dissolved phase volatile aromatic hydrocarbons from 172,000 square feet of contaminated aquifer. Purged water totaling a flow of 38-40 gpm is treated by a conventional counter current packed air stripping tower (AST). After treatment, water will be reinjected into 5 wells in the absence of nutrient to safe guard against aquifer permeability loss due to increase in cell mass. After 5 months of treated water injection this will be followed by 12 to 15 months of nutrient addition with 3 additional months of straight groundwater injection. The treated water will be air saturated with a dissolved oxygen concentration of approximately 10 mg/l.

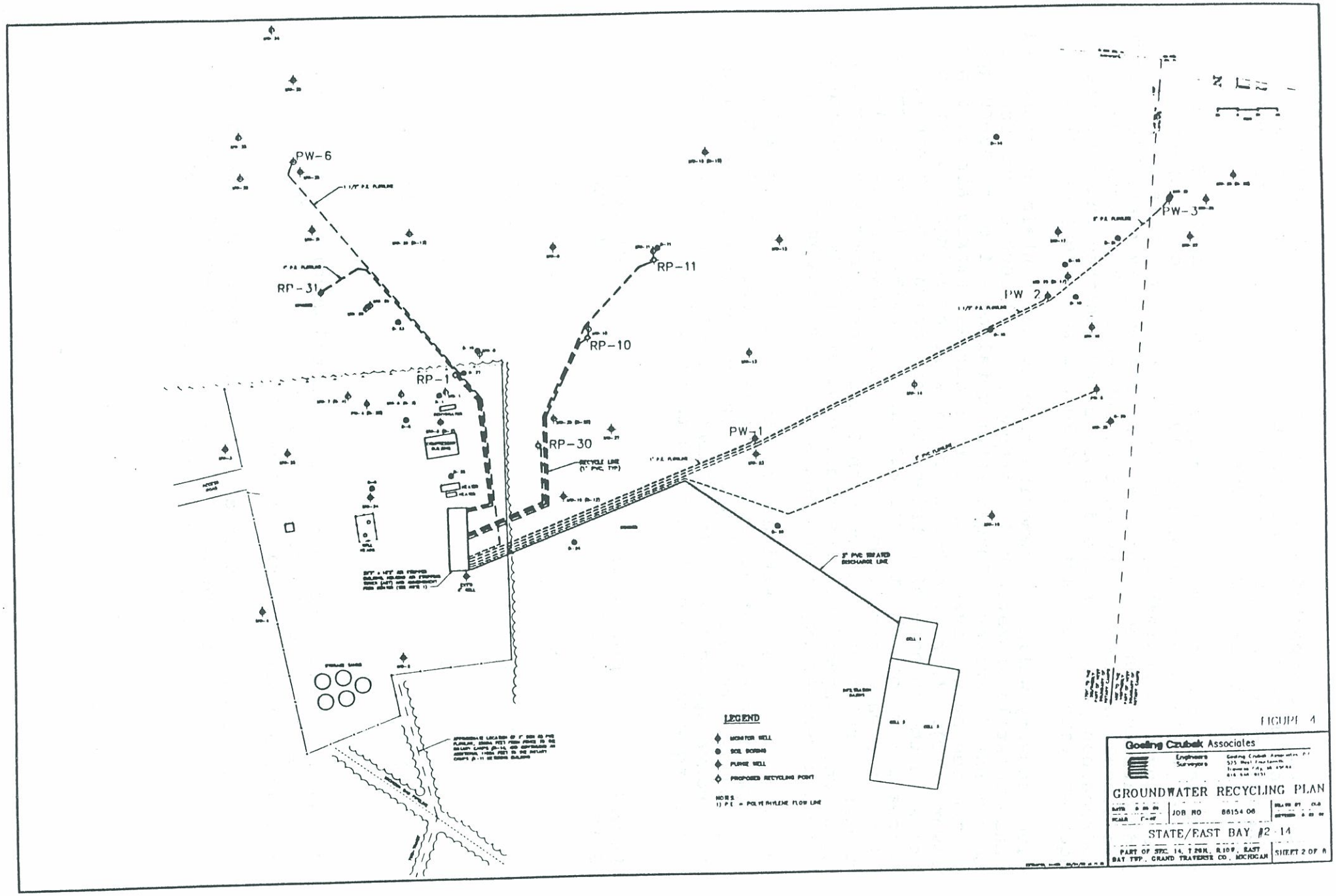
The recycled water distribution patterns will be followed by performing an Aquifer Recharge Step (ARS) test. The ARS test will be used to field verify the site hydraulic gradient changes and update spreadsheet calculations. ARS testing will consist of obtaining water table elevation data as follows:

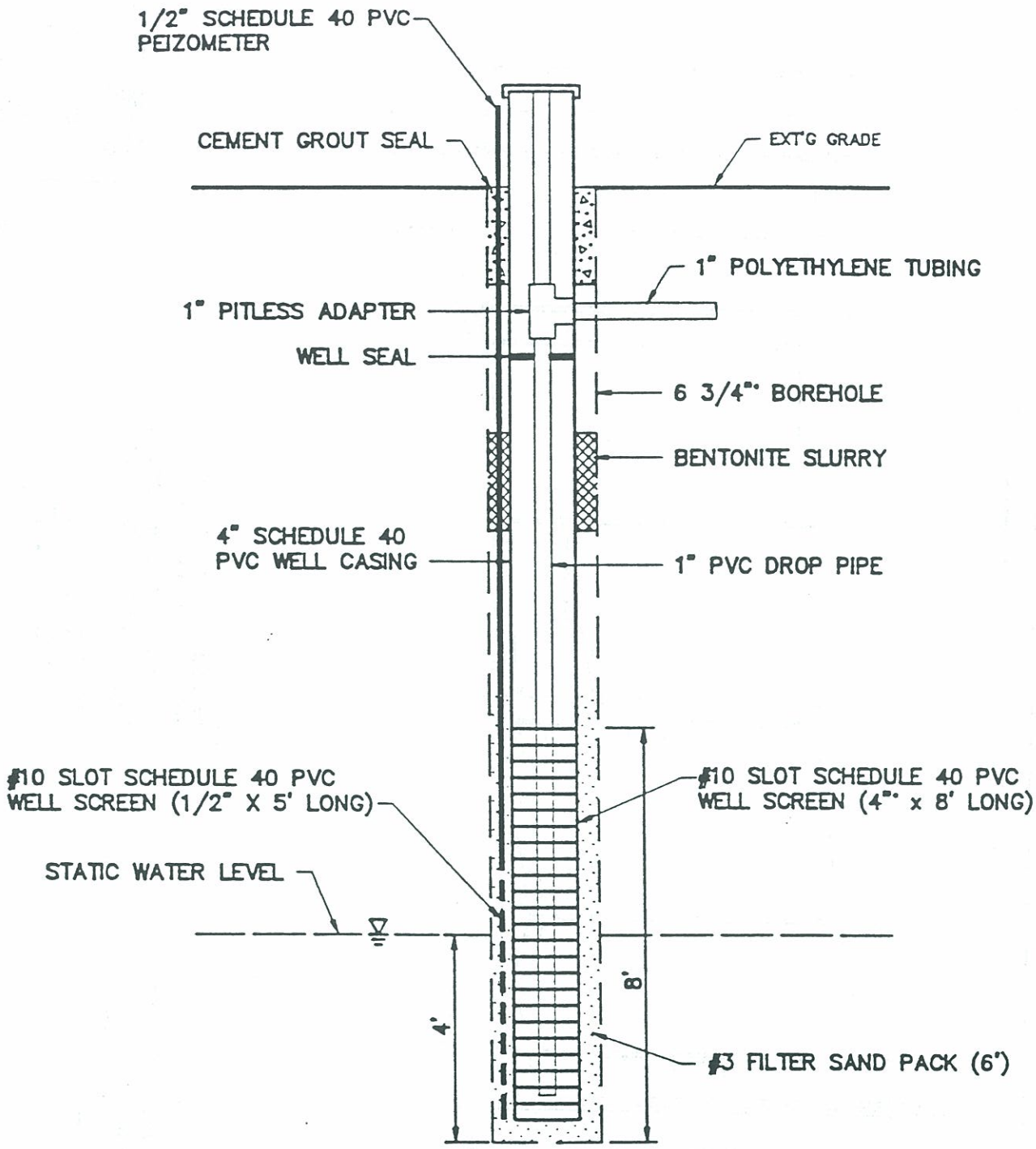
Recycle Point	Flow Rate (gpm)	Recycle Life (Days)
1	.5	0, 7, 14
10,11,30,31	1.0	0, 7, 14
1	1.0	0, 7, 14, 44
10,11,30,31	2.0	0, 7, 14, 44

The ARS test will determine the increased gradient about each injection well, due to mounding effects, and the overall site gradient and flow distribution patterns.

Pore volume exchange rates and the associated dissolved oxygen, nitrogen, and phosphorus uptake by the sessile and planktonic microorganism population will also be cross correlated to

Prepared by: Gosling Czubak Associates, P.C.
Richard M. Reetz
P. + Manager


PW-6
RP-31
RP-1
RP-11
RP-10
RP-30
PW-1
PW 2
PW-3
RECYCLE LINE (1" PVC, TYP)
5" PVC TO AERO DISCHARGE LINE
LEGEND
MONITOR WELL
SOIL BORING
PUMPING WELL
PROPOSED RECYCLING POINT
NOTES
1) P.E. = POLYETHYLENE FLOW LINE
FIGURE 4
Goeling Czubak Associates
Engineers Surveyors
GROUNDWATER RECYCLING PLAN
JOB NO 88154.08
STATE/EAST BAY #2-14
PART OF SEC. 14, T.26N., R.10E., EAST BAY TWP., GRAND TRAVERSE CO., MICHIGAN
SHEET 2 OF 8



TYPICAL NUTRIENT INJECTION WELL

CONOCO STATE/EAST BAY #2-14

PART OF SEC. 14, T.26N., R.10W., EAST BAY TWP., GRAND TRAVERSE CO., MICHIGAN

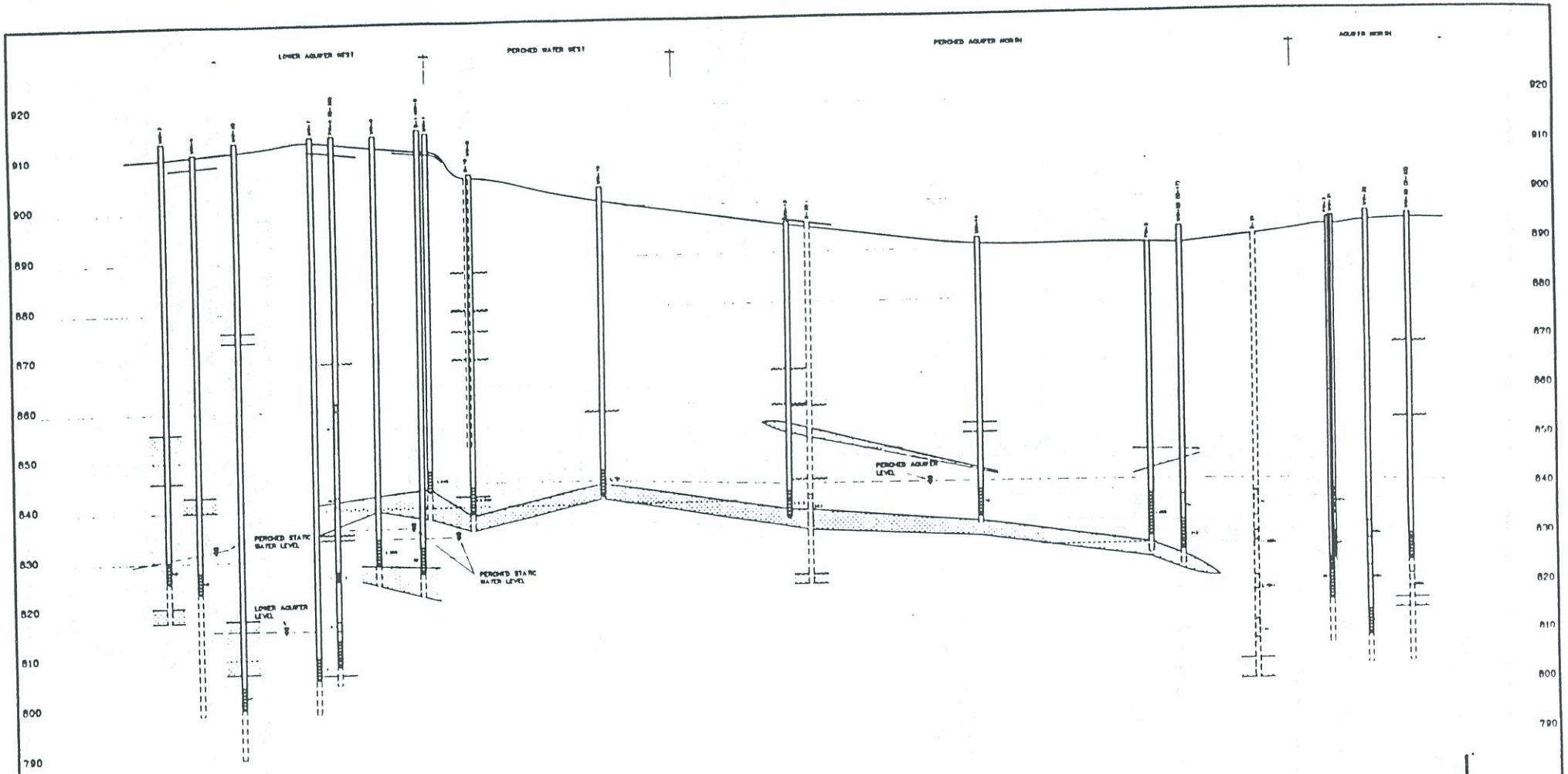
Gosling Czubak Associates

FIGURE 5

Engineers
Surveyors

Gosling Czubak Associates, P.C.
525 West Fourteenth
Traverse City, MI 49684
616 946-9191

PROJECT NO.: 86154.06
INJWELL2, 1=12 , 08/24/92 at 16:32



LEGEND

- WATER SAMPLE w/TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES CONCENTRATIONS (ppb)
- SOIL SAMPLE w/TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES CONCENTRATIONS (ppb)
- BROWN TO LIGHT BROWN FINE SAND, TRACE MEDIUM SAND, TRACE TO LITTLE FINE GRAVEL
- LENS OF FINE TO COARSE GRAVEL
- GRAY SILT AND CLAY
- GRAY CLAY AND SILT

NOTES:

1) MONITOR WELL NOS. 8, 11 AND 12 EAST 115', 105' AND 105' WEST OF THE CROSS SECTION LINE, RESPECTIVELY
2) MONITOR WELL NO. 13 RELEASED QUANTITIES OF VAPOR PHASE HYDROCARBONS AFTER INSTALLATION
3) STATIC WATER LEVEL DATA WAS OBTAINED ON DECEMBER 13, 1990. SEE "STATIC WATER LEVEL DATA SHEET" FOR DETAILS OF STATIC WATER LEVEL ELEVATIONS.
4) CONTAMINANT DATA WAS OBTAINED BETWEEN SEPTEMBER, 1989 AND JUNE, 1991. SEE "RESULTS OF LABORATORY ANALYSES" FOR DETAILS OF CONTAMINANT CONCENTRATIONS.
5) ND - NOT DETECTED
6) SCALE: 1"=40' HORIZ., 1"=10' VERT
7) SEE SHEET NO. 5, "FENCE DIAGRAM C-C", FOR LOCATION OF PW 1.
8) SEE SHEET NO. 6, "FENCE DIAGRAM D-D", FOR LOCATION OF PW-4.
9) MW-8 WAS LOGGED WITH LENS OF SILT AT 26' TO 44'.
10) "+" INDICATES DATA PREVIOUSLY OBTAINED AT TIME OF VERTICAL SAMPLING.

REVISED 8-8-91
REVISED 4-30-91
REVISED 1-13-91
DRAWN FOR SEPTEMBER

FIGURE 2

Gosling Czubak Associates
Engineers
Surveyors

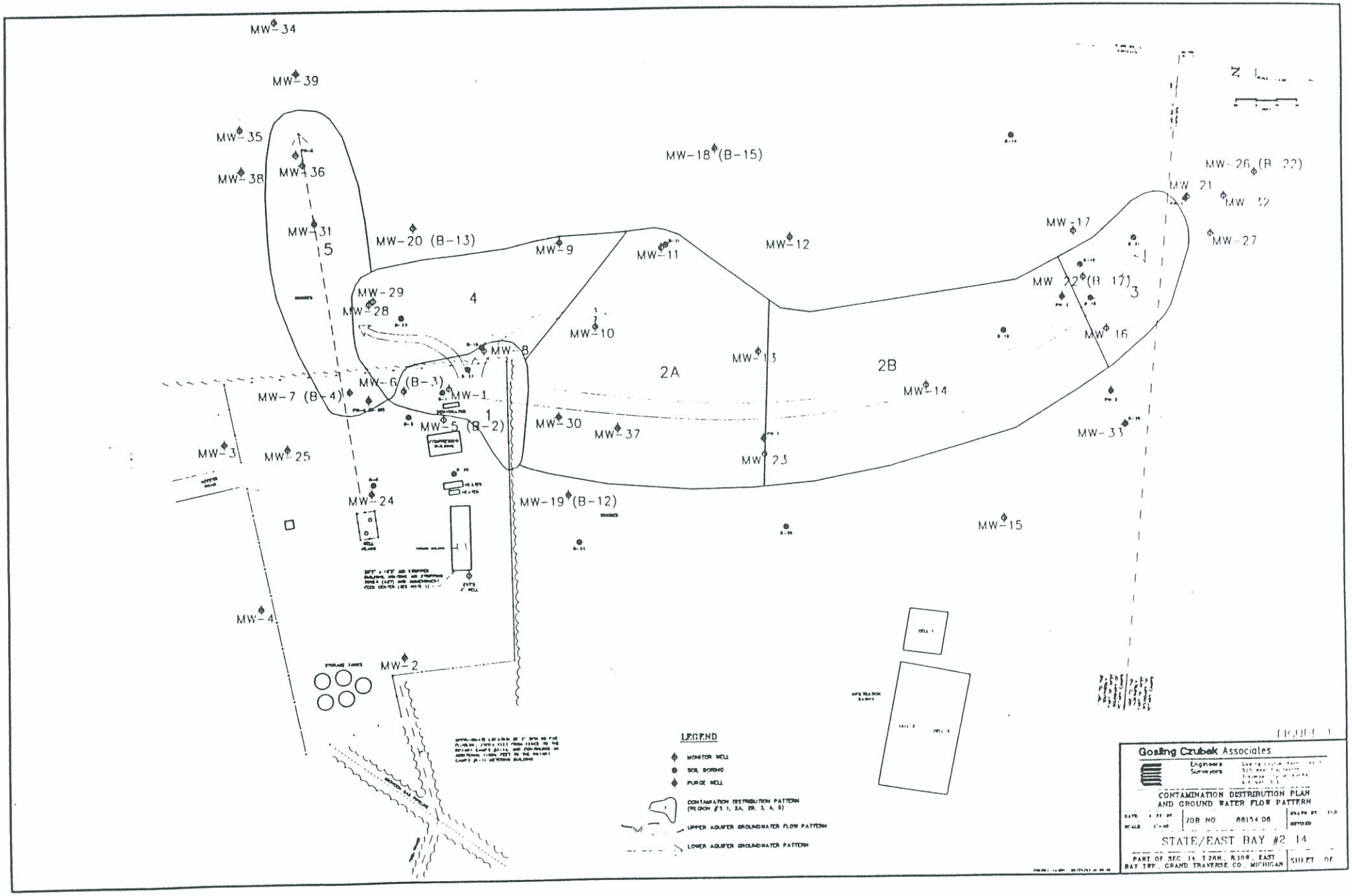
HYDROGEOLOGIC CROSS SECTION A-A

DATE 8-14-90 | JOB NO. 88154.08 | DRAWN BY C.S.
SCALE AS NOTED | REVISED 1-25-90

STATE/EAST BAY #2 14

PART OF SEC. 14, T.26N., R.10W., EAST BAY TWP., GRAND TRAVERSE CO., MICHIGAN

SHEET 6 OF 6


MW-34
MW-39
MW-35
MW-38
MW-36
MW-31
5
MW-20 (B-13)
MW-9
MW-11
MW-12
MW-18 (B-15)
MW-26 (B-22)
MW-21
MW-22
MW-27
MW-17
MW-22 (B-17)
3
MW-29
MW-28
4
MW-10
MW-8
MW-13
2A
2B
MW-16
MW-14
MW-6 (B-3)
MW-1
MW-7 (B-4)
1
MW-5 (B-2)
MW-30
MW-37
MW-33
MW-3
MW-25
MW-23
MW-24
MW-19 (B-12)
MW-15
MW-4
MW-2
N
LEGEND
MONITOR WELL
SOIL BORING
PURGE WELL
CONTAMINATION DISTRIBUTION PATTERN (REGION #'S 1, 2A, 2B, 3, 4, 5)
UPPER AQUIFER GROUNDWATER FLOW PATTERN
LOWER AQUIFER GROUNDWATER PATTERN
Gosling Czubek Associates
Engineers
Surveyors
CONTAMINATION DISTRIBUTION PLAN
AND GROUND WATER FLOW PATTERN
JOB NO 88154.06
STATE/EAST BAY #2 14
PART OF SEC. 14, T.28N., R.10W., EAST
BAY TWP., GRAND TRAVERSE CO., MICHIGAN

APPENDIX "H"

HUNTING & TRAPPING AREA DESCRIPTION

SPECIES-SPECIFIC MANAGEMENT RECOMMENDATIONS

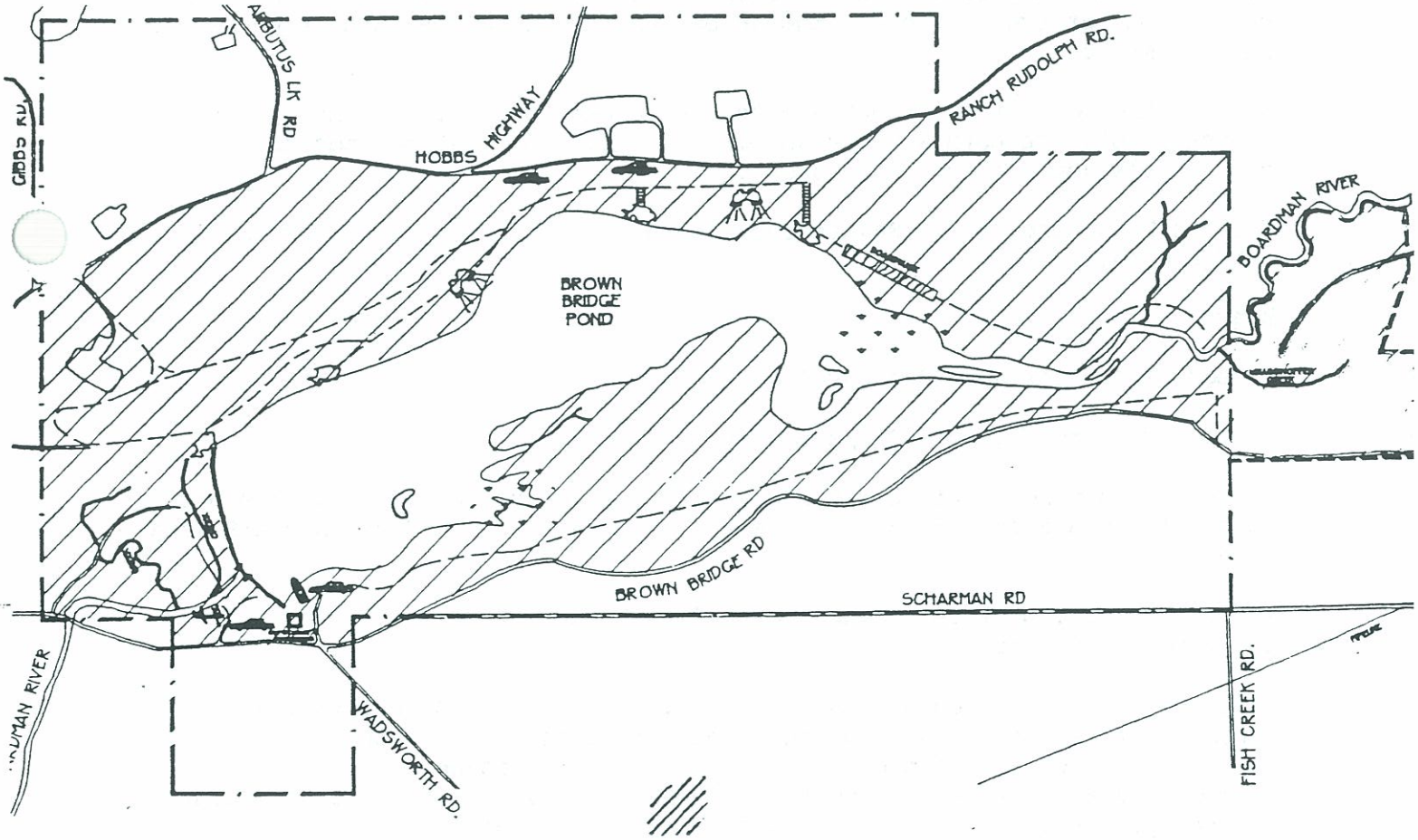
HUNTING AND TRAPPING

State regulated hunting & trapping is allowed on that portion of the Brown Bridge Quiet Area OUTSIDE the "Core Area".

NO HUNTING OR TRAPPING IS ALLOWED IN THE "CORE AREA" OF THE BROWN BRIDGE QUIET AREA.

The City of Traverse City reserves the right to allow species-specific hunting or trapping BY PERMIT ONLY on any or all of its property as deemed necessary for management reasons.

"Core Area" description: The Core Area is described as all City owned land south of Hobbs Highway and Ranch Rudolph Road, and north of Brown Bridge Road, extending to the east and west property lines of the Quiet Area.



'Core Area'

City of Traverse City

BROWN BRIDGE QUIET AREA

Species specific hunting, trapping and habitat recommendations (seasons may vary from what is noted here):

HUNTING

Deer

The three methods of harvest (listed most effective - least effective) and season length are:

1) Center fire rifle - November 15 - November 30.
2) Muzzleloading - December 13 - December 22.
3) Archery - October 1 - November 14 & December 1 - January 1.

Harvest by archery (bow hunting) alone will not sufficiently control deer populations at Brown Bridge. Should be combined with one other type of harvest method.

Harvest Recommendation: Continue to manage deer populations through yearly harvest. Utilize both archery and muzzleloading harvest methods to control deer populations in the "core area".

Habitat Recommendation: Reintroduce young aspen stands. Close Brown Bridge Road.

Bear

Season: September 10 - October 21.

Harvest Recommendation: Suspend harvest.

Habitat Recommendation: Limit human activity including hiking in the area north of the Boardman River, upstream of the reservoir. Close Brown Bridge Road.

The following improvement practices will enhance the production of preferred bear food.

Reintroduce young aspen stands. Selectively cut woody plants to maintain permanent forest openings and "soft mast production" (Hirsch 1989) in the northeast corner of the property, south of Ranch Rudolph Road. Plant native vegetation (i.e. blueberry, wild strawberry, raspberries, highbush cranberry, serviceberry, etc..) to provide summer and fall forage.

Cottontail rabbit & Varying hare

Season: September 15 - March 31.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: Young aspen regeneration.

Fox and Gray squirrel

Season: September 15 - January 1.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: None

Wild turkey

Season: Fall season - October 7 - November 4; Spring season varies.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: None

Woodcock

Season: September 15 - November 14.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: Young aspen regeneration.

Ruffed grouse

Season: September 15 - November 14 & December 1 - January 1.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: Young aspen regeneration.

Bobcat

Season: January 1 - March 1.

Harvest Recommendation: Suspend harvest

Habitat Recommendation: None.

Gray & Red fox

Season: October 25 - March 1.

Harvest Recommendation: Harvest by permit only.

Habitat Recommendation: None.

Coyote

Season: July 17 - April 16.

Harvest Recommendation: Harvest by permit only.

Habitat Recommendation: None.

Raccoon

Season: October 1 - January 1.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: None.

Crow

Season: September 15 - November 14 & January 1 - March 1.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: None.

Oppsum, Porcupine, Weasel, Red squirrel, Skunk, Starlings, Feral pigeons, English sparrows, Ground squirrels, and Woodchuck.

Season: No closed season.

Harvest Recommendation: Harvest by permit or in designated areas.

Habitat Recommendation: None.

Waterfowl

Pursue having Brown Bridge declared a Waterfowl Refuge.

TRAPPING

Muskrat, Mink, Raccoon

Season: November 1 - January 31.

Harvest Recommendation: Harvest by permit only.

Habitat Recommendation: See above.

Bobcat

Season: No open season.

Fox, Coyote

Season: October 15 - March 1.

Harvest Recommendation: Harvest by permit only.

Habitat Recommendation: See above.

Badger

Season: October 15 - November 14.

Harvest Recommendation: Suspend harvest

Habitat Recommendation: None.

River otter

Season:

Harvest Recommendation: Harvest by permit only.

Habitat Recommendation: None.

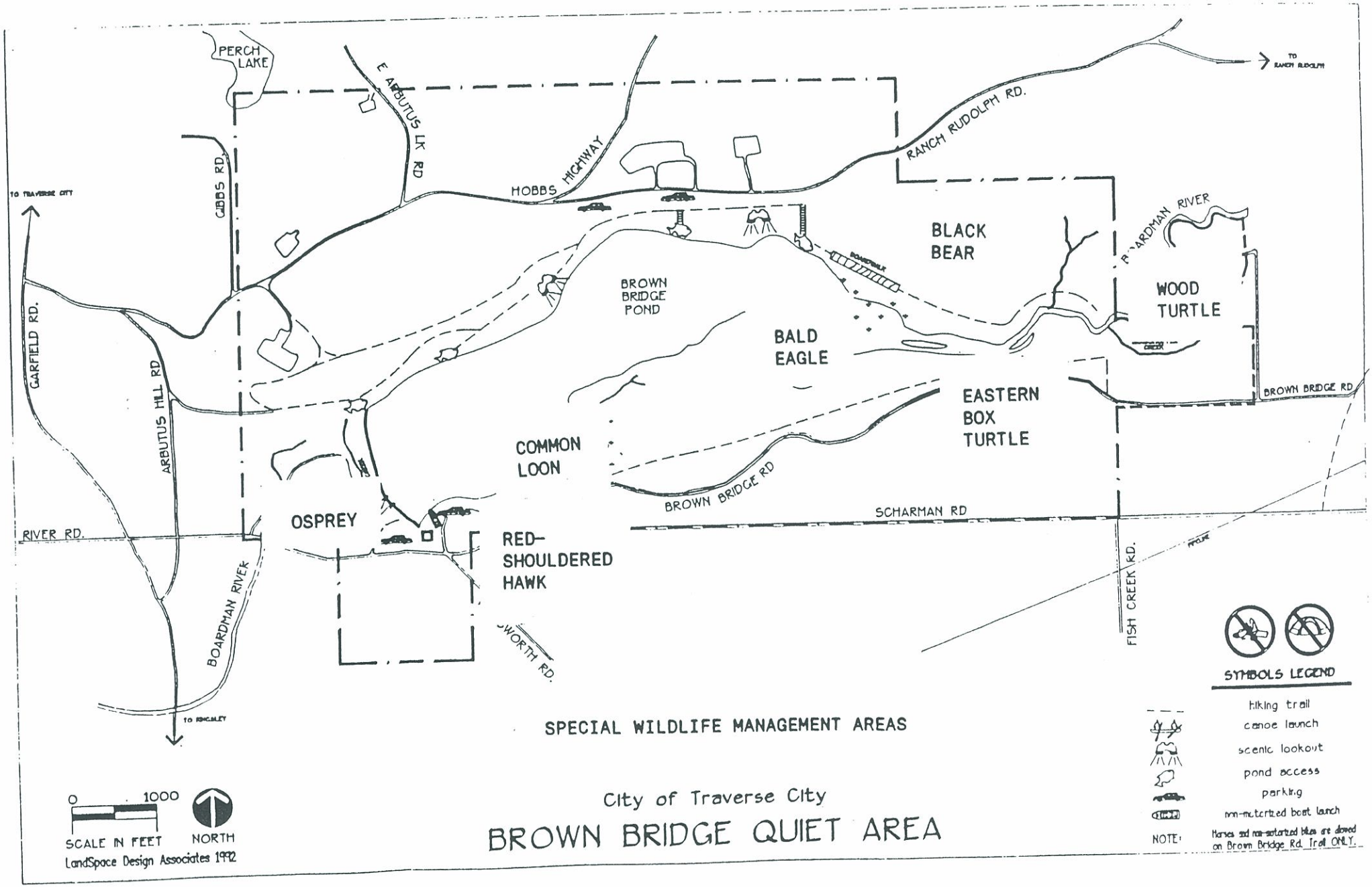
Snapping turtles

Season:

Harvest Recommendation: Harvest by permit only.

APPENDIX "I"

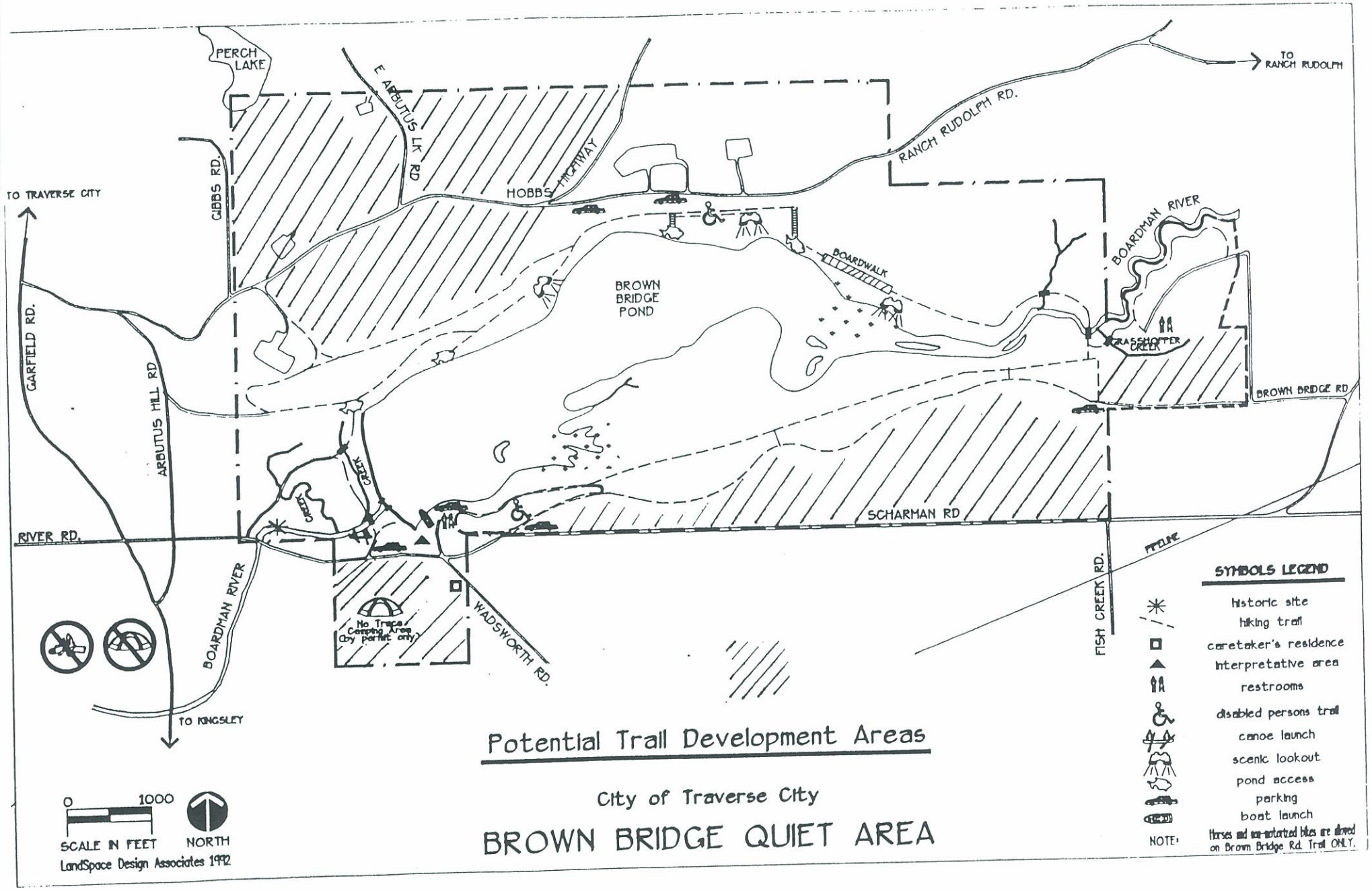
SPECIAL WILDLIFE MANAGEMENT AREAS (MAP)


PERCH LAKE
E ARBUTUS LK RD
HOBBS HIGHWAY
RANCH RUDOLPH RD.
TO RANCH RUDOLPH
TO TRAVERSE CITY
GIBBS RD.
GARFIELD RD.
ARBUTUS HILL RD
BROWN BRIDGE POND
BLACK BEAR
BOARDMAN RIVER
WOOD TURTLE
BALD EAGLE
BROWN BRIDGE RD
EASTERN BOX TURTLE
COMMON LOON
BROWN BRIDGE RD
SCHARMAN RD
OSPREY
RIVER RD.
RED-SHOULDERED HAWK
BOARDMAN RIVER
FISH CREEK RD.
WORTH RD.
TO RINGLEY
SYMBOLS LEGEND
hiking trail
canoe launch
scenic lookout
pond access
parking
non-motorized boat launch
NOTE:
Horses and non-motorized bikes are allowed on Brown Bridge Rd. Trail ONLY.
SPECIAL WILDLIFE MANAGEMENT AREAS
City of Traverse City
BROWN BRIDGE QUIET AREA
0
1000
SCALE IN FEET
NORTH
LandSpace Design Associates 1992

APPENDIX "J"

POTENTIAL TRAIL DEVELOPMENT AREAS (MAP)

"THE NEED FOR AN ENVIRONMENTAL AWARENESS/NATURE CENTER" (JUNE MASON)



Potential Trail Development Areas

City of Traverse City

BROWN BRIDGE QUIET AREA

THE NEED FOR AN ENVIRONMENTAL AWARENESS/NATURE CENTER

By: June Mason, Chairman
Brown Bridge Advisory Committee

(* excerpted from a report to the City Commission)

Northern Michigan, like most areas of the country, is experiencing rapid growth, development and change. There are more people, more highways, more sprawling subdivisions for housing, and more commercial enterprises. There are also understandable restrictions on school financing, meaning that a copious curriculum is no longer possible. Hence, no consistent program of resource awareness and conservation ethics is offered to the public.

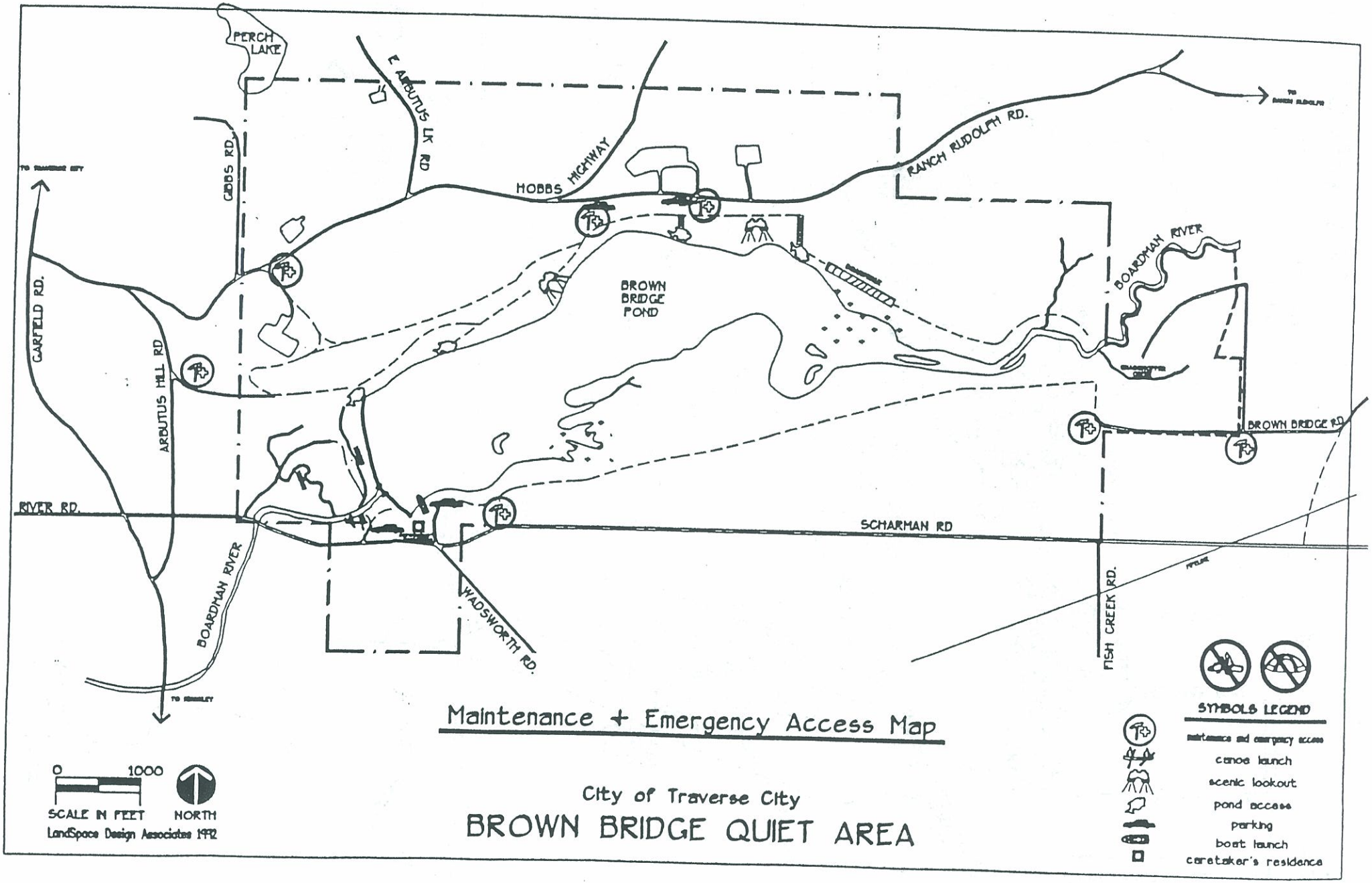
The Grand Traverse Area is fortunate in having large tracts of open space and natural lands suitable for the study of the natural environment, for outdoor recreation, quietude, and beauty. Local leaders recognize that this is the strongest appeal to our viable economy. People want to live where surroundings are pleasant. All this suggests a need for planning, long range thinking, and innovative action programs.

At present, there is no real center for learning about our natural environs that is available to the general public. There are hit and miss projects and information offered by local, state and federal agencies that may or may not continue to be funded. Therefore, a Center for Outdoor Awareness and Appreciation is badly needed. And, since much of our local revenues come from oil and gas production on the Niagarin Reef as well as problems associated with extraction of that resource, such a Center would help to understand wildlife needs and environmental requirements as well as wise resource management. Such a facility would also lead to an appreciation of outdoor recreation areas and maintaining them for the future.

APPENDIX "K"

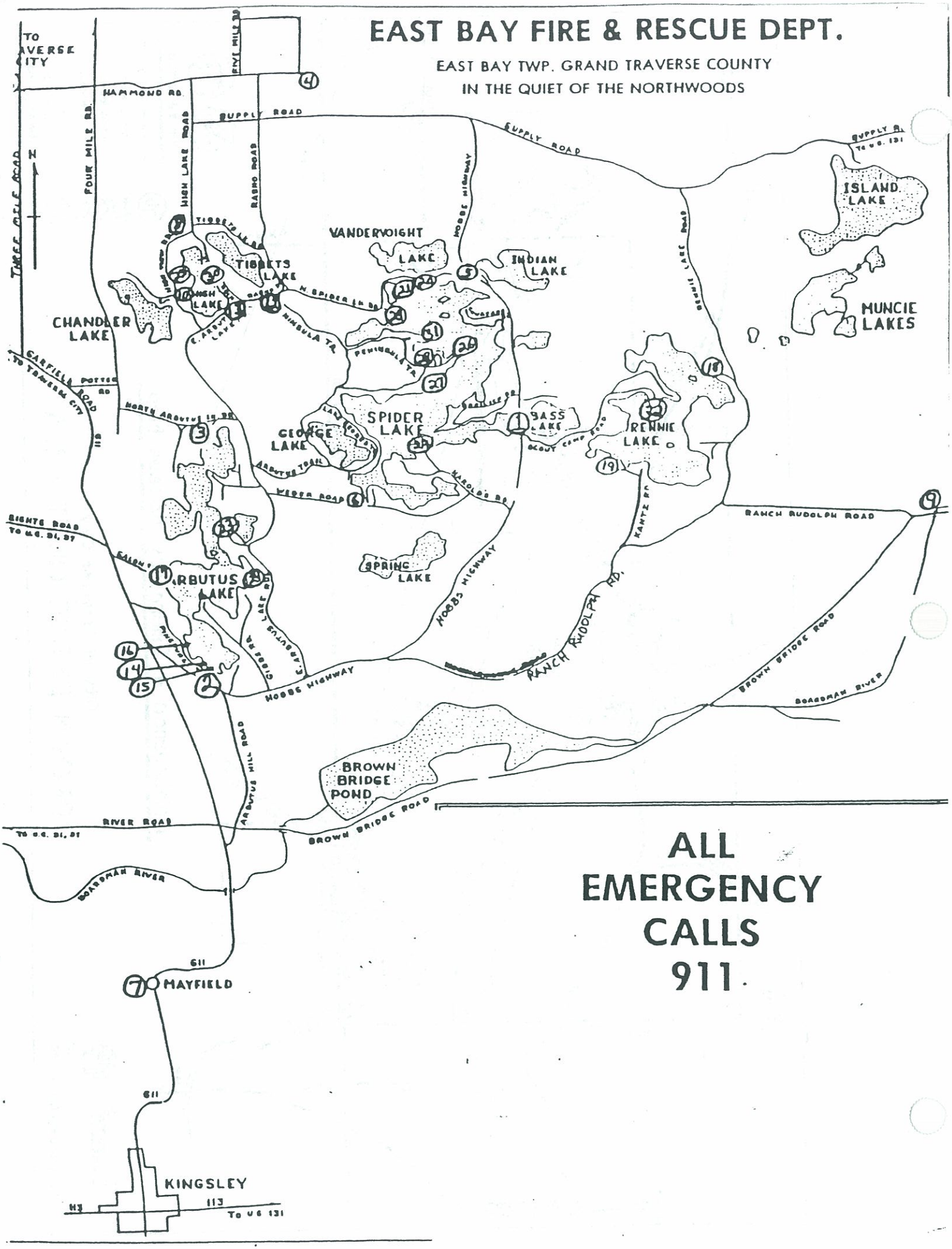
EMERGENCY & MAINTENANCE ACCESS (MAP)

EAST BAY TOWNSHIP RESPONSE AREA (MAP)


PERCH LAKE
E ARBUTUS LK RD
HOBBS HIGHWAY
RANCH RUDOLPH RD.
TO RANCH RUDOLPH
TO TRAVERSE CITY
GIBBS RD.
GARFIELD RD.
ARBUTUS HILL RD
BROWN BRIDGE POND
BOARDMAN RIVER
BROWN BRIDGE RD
RIVER RD.
SCHARMAN RD
BOARDMAN RIVER
WADSWORTH RD.
FISH CREEK RD.
TO KIMBALLY
Maintenance + Emergency Access Map
0
1000
SCALE IN FEET
NORTH
LandSpace Design Associates 1992
City of Traverse City
BROWN BRIDGE QUIET AREA
SYMBOLS LEGEND
maintenance and emergency access
canoe launch
scenic lookout
pond access
parking
boat launch
caretaker's residence

EAST BAY FIRE & RESCUE DEPT.

EAST BAY TWP. GRAND TRAVERSE COUNTY
IN THE QUIET OF THE NORTHWOODS



ALL EMERGENCY CALLS 911.