

Wildlife Lake Habitat Survey: Camp 97 Waterfowl Impoundment

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Wildlife Lake Habitat Survey Information

Lake Name: Camp 97 (a.k.a. Ken Kramer) Waterfowl Impoundment

DOW Lake ID #: 69059400

Survey Date: 8/2/06 & 8/9/06

Survey Type: Wildlife Lake Habitat Survey

Survey Crew: Angela Aarhus (1854 Treaty Authority, 8/2/06 & 8/9/06), Penny Backman (MDNR, 8/9/06), & Rick Gitar (Fond du Lac Environmental Department, 8/2/06)

Location Description

Legal Description:

Township: 65N **Range:** 16W **Section:** 4

Township: 66N **Range:** 16W **Section:** 33

Primary County: St. Louis

DNR Work Area Name: Orr

DNR Wildlife Work Area: Int'l Falls

General DOW Lake Information

Basin Area (acres): ~ 60

Major Watershed: Vermilion River

PWI Class: W

Number of Public Accesses: 1

DOW Wetland Type: 8

Minor Watershed: 7300900

USGS Quad: Echo Lake

Miles of Shoreline: ~ 2

Survey Maximum Lake Depth (ft): 6.75

Survey Mean Lake Depth (ft): 2.6

Survey Maximum Secchi Depth (ft): 2.5

Survey Mean Secchi Depth (ft): 1.7

DOW Maximum Lake Depth (ft): n/a

DOW Mean Lake Depth (ft): n/a

Lake Survey Conditions

Survey Date: 8/2/06

Start Time: ~ 10:30

Temperature Air / Water (F): 80 / --

Sky Conditions: 0% Cloudy

Wind Speed (mph): ~ 5

Wind Direction: E

Survey Date: 8/9/06

Start Time: 07:47

Temperature Air / Water (F): 78 / 77

Sky Conditions: 0% Cloudy

Wind Speed (mph): ~ 5

Wind Direction: E

Previous Lake Survey Information:

Type of Survey	Year	Date
Biological Assessment	1998	6/23/98
Wildlife Lake Survey	2006	8/2/06 & 8/9/06

Survey Crew
1854 Treaty Authority
A. Aarhus (1854 Treaty Authority),
P. Backman (MDNR), R. Gitar (FDL)

Lake Survey Access Information:

Ownership: USFS

Access Type: Earthen

Description: Access road spurs off the Echo Trail and dead ends at impoundment, where a small parking area is located. An earthen carry down site exists along the dam which provides canoe access to impoundment waters.

Inlets and Outlets Information

Inlet Information

Camp 97 Creek originates just south of the impoundment.

Outlet Information

The small Camp 97 Creek was dammed up and a water control structure was installed to create a deepwater wetland management area. Approximately 80 acres of land were flooded to form the impoundment. Water level is manipulated by a stop log and steel culvert with screw gate control structure. Camp 97 Creek eventually flows into Echo Lake.

Additional Comments

The creation of the Camp 97 waterfowl impoundment in 1993 was a cooperative effort between the 1854 Treaty Authority, Minnesota DNR, Bureau of Indian Affairs, and US Forest Service. In late 2001, the water control structure was severely damaged by heavy flooding. The impoundment was temporarily drained while the dam was repaired. Repairs were completed in fall 2002 and the impoundment was successfully refilled the following year. Waterfowl nesting structures are annually maintained and monitored for production.

Water Level and Quality

Water Level Information

Water Level Reading Date: 8/2/06

Code: G

Benchmark/Gauge Description: Water depth gauge installed on 5/15/06 (initial depth was 34 inches) by sinking a five-foot section of PVC pipe, marked in one-inch increments, into the lake bottom near the water control structure (544193E, 5333176N)

Water Level Reading (inches + or -): 34 (gauge reading) – 8 (portion of gauge sunken in muck)

Current Water Level (inches): 26

Water Level Description: Water level at time of survey was 8 inches lower than the depth originally recorded on 5/15/06; some areas toward rear of impoundment were <1ft deep and difficult to navigate in using the canoe.

Water Quality Information

Sample Date: 8/9/06

Lake or Inlet (L or I): L

Station Number of Water Measurements: 23

Depth Measurements Taken: Just below water surface

Bottom Depth (ft): 3.5 (secchi = 2)

Conductivity (umhos): 25.9

Dissolved Oxygen (mg/L): 6.2 (75%)

pH: 6.7

Total Dissolved Solids (ppm): 17.5

Water Color Description: Brown - fairly tannic

Comments: A large portion of impoundment covered in floating bog; no water samples collected for further lab analysis.

Observations and Field Notes

Waterfowl Observations:

8/2/06: Observed one ring-necked hen with a brood of three ducklings.

8/9/06: Observed one hen mallard, a duck flyover (possibly widgeon), and two ring-necked hens with broods (with four and five ducklings).

Other Wildlife Observations:

8/2/06: Observed a pair of common loons and their two young. Also observed a painted turtle basking on a log, a chipmunk on the shoreline, and an American Bittern.

8/9/06: Observed a female pied-billed grebe, the same pair of loons with their brood of two young, one kingfisher, and various tree swallows. An active muskrat lodge was seen at the front of the impoundment near C35. An active beaver dam and lodge were found to the east of C58. A few inactive beaver lodges were also observed at the rear of the impoundment near C73.

Field Notes:

Approximately half of the 85 original veg stations (n=42) generated by ArcView could not be surveyed in 2006 because they were situated on/among large pieces of floating bog. Three of the 43 stations (C71, C72, and C74) surveyed were not accessible due to low water/thick muck, but adequate water was found nearby, so these stations were relocated and then surveyed (017, 018, and 020). An additional station was added (019) to provide information on aquatic vegetation in the inlet area since only a narrow channel of water was available to sample and none of the generated points fell within this area.

A fairly even distribution of submerged vegetation was recorded throughout the open water portion of the impoundment, except for one station in the main basin (C20) with a depth of almost 7 ft which had no vegetation detected. Stations near the shoreline and around floating bog areas had both a mixture of emergent and submergent aquatic plant species. One unknown emergent plant found at station 019 could not be identified based on the specimen collected. A few flowering wild rice plants (1.5–2 ft tall) were observed along the eastern shoreline of the impoundment. Some stalks had been chewed off.

Broadleaf cattails were observed growing along the shoreline near the water control structure. Cattails were also observed to be quite dense at the rear of the impoundment (inlet area), but it was not apparent whether this was the broadleaf or narrowleaf species.

Water clarity was fairly tannic. Various minnows and leeches were seen in the water. Eight wooden duck boxes in good condition were located on shoreline trees/snags (n=4) and mounted on poles over water (n=4) throughout the impoundment.

Two weeks prior to the veg survey, a canoe was taken into the beaver pond to the east of C58. While low water levels prevented much navigation, quite a bit of watershield, in addition to yellow water lily and wild rice, were observed.

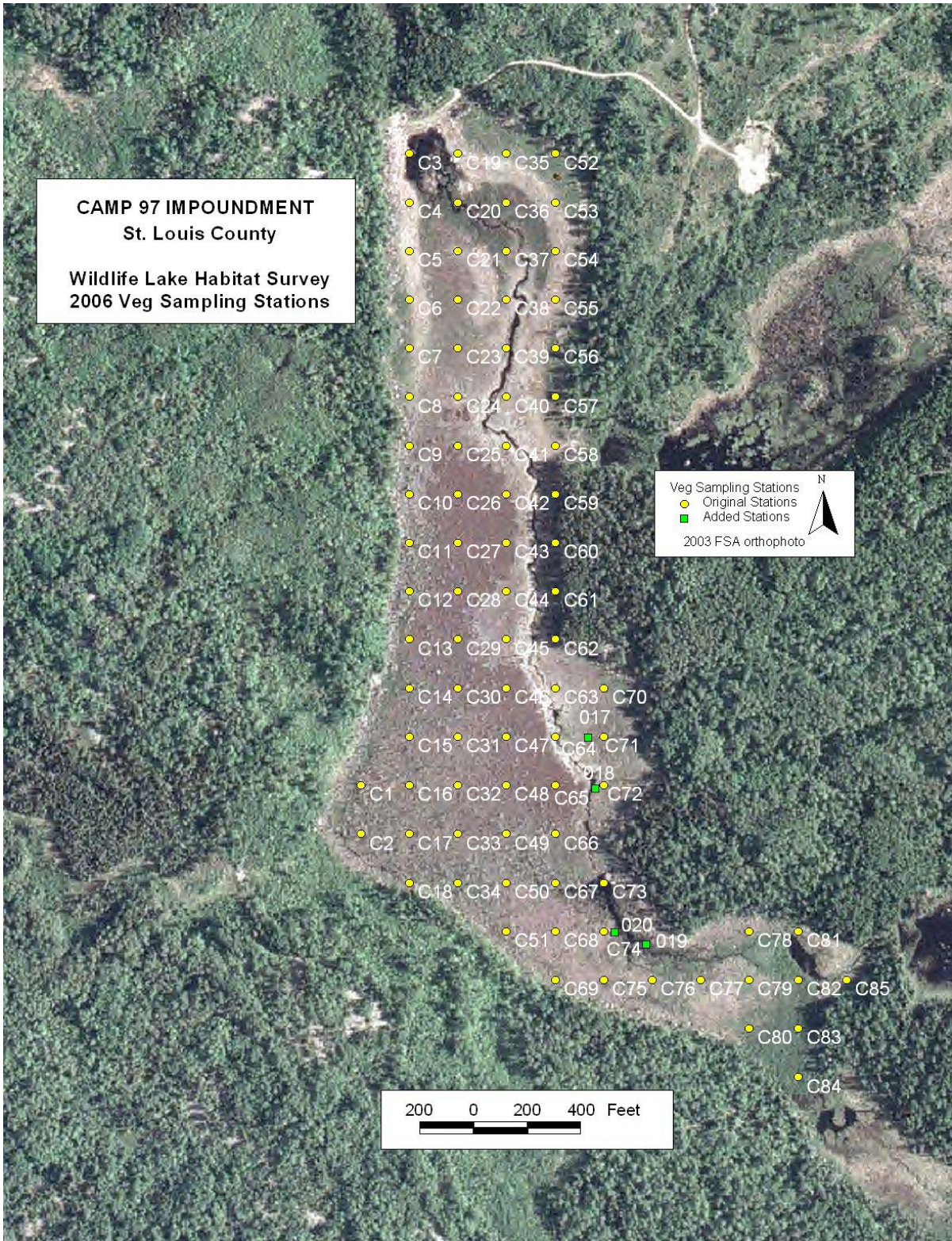


Figure 1. Map of 85 original veg sampling stations (yellow circles) generated by placing a grid (180 ft x 180 ft) over a 2003 FSA orthophoto of the Camp 97 Waterfowl Impoundment using ArcView software. Four additional veg stations (green squares) were surveyed in the field due to their close proximity to several original sampling stations deemed inaccessible.

**Wildlife Lake Sample Station Summary -
Camp 97 Waterfowl Impoundment
Survey Dates: 8/2/06 & 8/9/06**

Sample Station Information

Minimum Depth: 0.25	Minimum Secchi: 0.25	Initial Number of Stations: 85
Maximum Depth: 6.75	Maximum Secchi: 2.50	Number of Stations Sampled: 44
Mean Depth: 2.6	Mean Secchi: 1.7	

Vegetation Summary

Number of Sample Stations: 44
Lakewide Species Richness: 42
Percent of Vegetated Plots: 97.7%

Vegetation Species	# of Plots Occurring	Species Frequency (%)	95% CI	High C / I	Low C / I	Frequency Value
Polygonum amphibium	40	90.9	0.0973	1.0064	0.8118	0.9091
Utricularia intermedia	33	75.0	0.1408	0.8908	0.6092	0.7500
Ceratophyllum demersum	27	61.4	0.1569	0.7705	0.4567	0.6136
Gramineae spp.	22	50.0	0.1608	0.6608	0.3392	0.5000
Potamogeton obtusifolius	15	34.1	0.1530	0.4940	0.1879	0.3409
Carex spp.	14	31.8	0.1506	0.4688	0.1676	0.3182
Brasenia schreberi	10	22.7	0.1366	0.3639	0.0907	0.2273
Utricularia spp.	9	20.5	0.1319	0.3365	0.0726	0.2045
Potentilla palustris	9	20.5	0.1319	0.3365	0.0726	0.2045
Sagittaria latifolia	7	15.9	0.1207	0.2798	0.0384	0.1591
Scirpus spp.	4	9.1	0.0973	0.1882	-0.0064	0.0909
Glyceria borealis	4	9.1	0.0973	0.1882	-0.0064	0.0909
Spiraea alba	4	9.1	0.0973	0.1882	-0.0064	0.0909
Potamogeton foliosus	4	9.1	0.0973	0.1882	-0.0064	0.0909
Calla palustris L.	4	9.1	0.0973	0.1882	-0.0064	0.0909
Nuphar variegata	3	6.8	0.0867	0.1549	-0.0185	0.0682
Eleocharis spp.	3	6.8	0.0867	0.1549	-0.0185	0.0682
Typha latifolia	3	6.8	0.0867	0.1549	-0.0185	0.0682
Triadenum fraseri	3	6.8	0.0867	0.1549	-0.0185	0.0682
Lycopus uniflorus	3	6.8	0.0867	0.1549	-0.0185	0.0682
Polygonum FL spp.	2	4.5	0.0736	0.1191	-0.0282	0.0455
Zizania palustris	2	4.5	0.0736	0.1191	-0.0282	0.0455
Carex lenticularis	2	4.5	0.0736	0.1191	-0.0282	0.0455
Calamagrostis canadensis	2	4.5	0.0736	0.1191	-0.0282	0.0455
Scirpus cyperinus	2	4.5	0.0736	0.1191	-0.0282	0.0455
Sparganium chlorocarpum	2	4.5	0.0736	0.1191	-0.0282	0.0455
Chamaedaphne calyculata	2	4.5	0.0736	0.1191	-0.0282	0.0455
Lemna minor	2	4.5	0.0736	0.1191	-0.0282	0.0455
Sagittaria cuneata	1	2.3	0.0559	0.0786	-0.0332	0.0227
Salix spp.	1	2.3	0.0559	0.0786	-0.0332	0.0227
Callitriche hermaphroditica	1	2.3	0.0559	0.0786	-0.0332	0.0227
Carex rostrata	1	2.3	0.0559	0.0786	-0.0332	0.0227
Cicuta maculata	1	2.3	0.0559	0.0786	-0.0332	0.0227
Iris versicolor	1	2.3	0.0559	0.0786	-0.0332	0.0227
Potamogeton natans	1	2.3	0.0559	0.0786	-0.0332	0.0227
Scirpus validus	1	2.3	0.0559	0.0786	-0.0332	0.0227
Scirpus acutus	1	2.3	0.0559	0.0786	-0.0332	0.0227

Vegetation Species	# of Plots Occurring	Species Frequency (%)	95% CI	High C / I	Low C / I	Frequency Value
Potamogeton epihydrus	1	2.3	0.0559	0.0786	-0.0332	0.0227
Unknown Emergent 1	1	2.3	0.0559	0.0786	-0.0332	0.0227
Sagittaria spp.	1	2.3	0.0559	0.0786	-0.0332	0.0227
Hypericum spp.	1	2.3	0.0559	0.0786	-0.0332	0.0227
Polygonum EM spp.	1	2.3	0.0559	0.0786	-0.0332	0.0227
No Vegetation Found	1	2.3	0.0559	0.0786	-0.0332	0.0227

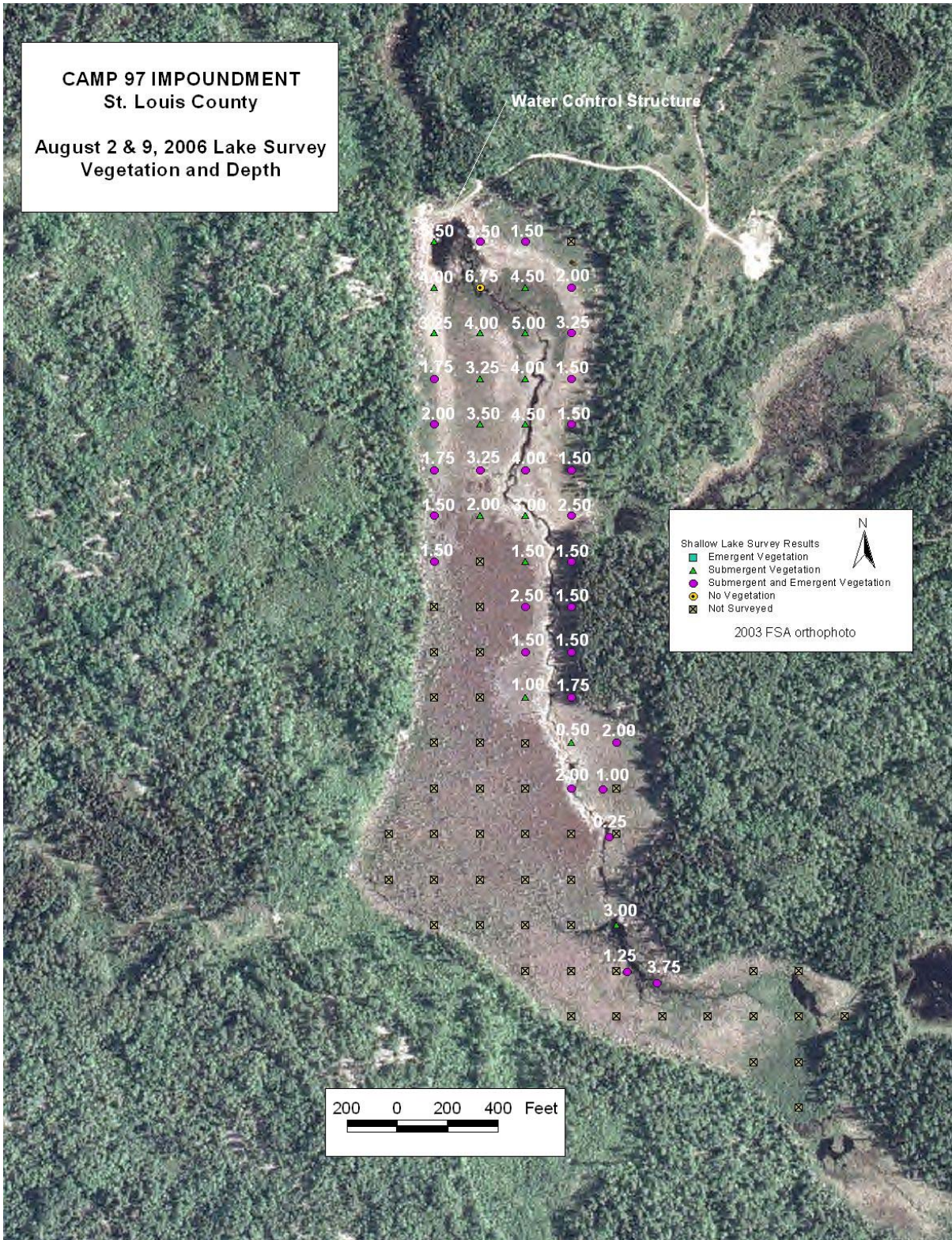


Figure 2. Vegetation and depth information collected during the wildlife lake habitat survey of Camp 97 Waterfowl Impoundment on August 2 and 9, 2006.

		STATION NUMBER	C3	C4	C5	C6	C7	C8	C9	C24	C40	C57	C56	C55	C19	C20	C21	C22	C23	C39	C38	C37	C36	C35	C53		
		DEPTH (ft)	5.50	4.00	3.25	1.75	2.00	1.75	1.50	3.25	4.00	1.50	1.50	1.50	3.50	6.75	4.00	3.25	3.50	4.50	4.00	5.00	4.50	1.50	2.00		
		SECCHI (ft)	1.50	-	2.00	-	2.00	-	1.25	-	2.00	-	1.25	1.50	1.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	1.50	2.00		
		ALGAE	X	X	X	X	X	X	X	X	X	X	X	X										X	X		
		TYPE VEGETATION SPECIES	COMMON NAME																								
FF	Lemna minor	Lesser Duckweed																							X		
F	Brasenia schreberi	Water Shield	X									X	X	X	X										X		
F	Nuphar variegata	Common Yellow Waterlily								X				X													
F	Polygonum amphibium	Water Smartweed	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		
F	Polygonum FL spp.	Floatingleaf Smartweed Group	X									X															
S	Callitriche hermaphrodita	Autumnal Water Starwort				X																					
S	Ceratophyllum demersum	Coontail	X	X			X				X		X		X		X	X	X	X	X	X	X	X	X		
S	Potamogeton epihydrus	Nuttall's Pondweed																									
S	Potamogeton foliosus	Leafy Pondweed													X										X		
S	Potamogeton natans	Floatingleaf Pondweed																									
S	Potamogeton obtusifolius	Bluntleaf Pondweed													X		X	X	X					X			
S	Utricularia intermedia	Bladderwort (intermedia)			X	X	X	X	X	X	X		X	X			X	X	X		X			X	X		
S	Utricularia spp.	Bladderwort Group			X	X	X	X		X	X	X	X	X													
E	Calamagrostis canadensis	Bluejoint				X			X																		
E	Calla palustris L.	Water Arum (Wild Calla)																									
E	Carex lenticularis	Shore Sedge										X	X														
E	Carex rostrata	Beaked Sedge												X													
E	Carex spp.	Narrow-leaf Sedge				X	X	X				X												X	X		
E	Chamaedaphne calyculata	Leatherleaf							X																		
E	Cicuta maculata	Giant Water Hemlock												X													
E	Eleocharis spp.	Spikerush Group											X														
E	Glyceria borealis	Manna Grass							X			X	X	X													
E	Gramineae spp.	Grasses (Graminae)					X	X	X	X	X	X	X	X										X	X		
E	Hypericum spp.	St. John's Wort Group																									
E	Iris versicolor	Blue Flag Iris												X													
E	Lycopus uniflorus	Northern Water Horehound																									
E	Polygonum EM spp.	Emergent Smartweed Group																									
E	Potentilla palustris	Swamp Fivefinger																									
E	Sagittaria cuneata	Arrowhead												X													
E	Sagittaria latifolia	Broad-leaved Arrowhead										X	X														
E	Sagittaria spp.	Arrowhead/Duck Potato Group																									
E	Salix spp.	Willow							X																		
E	Scirpus acutus	Hardstem Bulrush																									
E	Scirpus cyperinus	Wool Grass							X																		
E	Scirpus spp.	Bulrush					X		X																		
E	Scirpus validus	Softstem Bulrush																									
E	Sparganium chlorocarpum	Greenfruited Burreed				X																					
E	Spiraea alba	Narrow-leaved Meadowsweet							X																		
E	Triadenum fraseri	Marsh St. John's Wort																									
E	Typha latifolia	Broadleaf Cattail							X			X		X													
E	Unknown Emergent	Unknown Emergent																									
E	Zizania palustris	Wild Rice													X												
		No vegetation found														X											
		STATION SPECIES RICHNESS	4	2	3	7	7	5	11	5	5	10	10	12	6	0	4	4	4	2	3	2	2	7	6		

		STATION NUMBER	C54	C41	C25	C10	C58	C59	C60	C61	C62	C63	C71(017)*	C64	C72(018)*	C73	C74(020)*	019**	C70	C45	C44	C43	C42
		DEPTH (ft)	3.25	3.00	2.00	1.50	2.50	1.50	1.50	1.50	1.75	0.50	1.00	2.00	0.25	3.00	1.25	3.75	2.00	1.00	1.50	2.50	1.50
		SECCHI (ft)	2.00	1.50	2.00	1.50	2.00	1.50	1.50	1.50	1.75	0.50	1.00	2.00	0.25	2.00	1.25	2.00	2.00	1.00	1.50	2.00	1.50
		ALGAE	X				X	X	X	X	X	X	X						X		X		
		COMMON NAME																					
FF	Lemna minor	Lesser Duckweed													X								
F	Brasenia schreberi	Water Shield					X	X			X												X
F	Nuphar variegata	Common Yellow Waterlily											X										
F	Polygonum amphibium	Water Smartweed	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X		X	X	X
F	Polygonum FL spp.	Floatingleaf Smartweed Group																					
S	Callitriche hermaphrodita	Autumnal Water Starwort																					
S	Ceratophyllum demersum	Coontail	X	X	X		X	X	X	X	X				X		X	X		X			X
S	Potamogeton epihydrus	Nuttall's Pondweed														X							
S	Potamogeton foliosus	Leafy Pondweed					X			X													
S	Potamogeton natans	Floatingleaf Pondweed									X												
S	Potamogeton obtusifolius	Bluntleaf Pondweed				X	X	X	X	X	X				X		X			X			X
S	Utricularia intermedia	Bladderwort (intermedia)		X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X
S	Utricularia spp.	Bladderwort Group																					
E	Calamagrostis canadensis	Bluejoint																					
E	Calla palustris L.	Water Arum (Wild Calla)													X		X	X					X
E	Carex lenticularis	Shore Sedge																					
E	Carex rostrata	Beaked Sedge																					
E	Carex spp.	Narrow-leaf Sedge	X			X							X		X		X	X			X	X	
E	Chamaedaphne calyculata	Leatherleaf																					X
E	Cicuta maculata	Giant Water Hemlock																					
E	Eleocharis spp.	Spikerush Group				X											X						
E	Glyceria borealis	Manna Grass																					
E	Gramineae spp.	Grasses (Graminae)				X	X	X	X	X	X				X		X	X	X		X	X	
E	Hypericum spp.	St. John's Wort Group																					X
E	Iris versicolor	Blue Flag Iris																					
E	Lycopus uniflorus	Northern Water Horehound													X		X	X					
E	Polygonum EM spp.	Emergent Smartweed Group													X								
E	Potentilla palustris	Swamp Fivefinger				X		X		X			X		X		X	X	X		X		
E	Sagittaria cuneata	Arrowhead																					
E	Sagittaria latifolia	Broad-leaved Arrowhead							X					X	X		X	X					
E	Sagittaria spp.	Arrowhead/Duck Potato Group																X					
E	Salix spp.	Willow																					
E	Scirpus acutus	Hardstem Bulrush													X								
E	Scirpus cyperinus	Wool Grass													X								
E	Scirpus spp.	Bulrush											X				X						
E	Scirpus validus	Softstem Bulrush												X									
E	Sparganium chlorocarpum	Greenfruited Burreed							X														
E	Spiraea alba	Narrow-leaved Meadowsweet								X	X		X										
E	Triadenum fraseri	Marsh St. John's Wort													X		X	X					
E	Typha latifolia	Broadleaf Cattail																					
E	Unknown Emergent	Unknown Emergent																X					
E	Zizania palustris	Wild Rice							X														
		<i>No vegetation found</i>																					
		STATION SPECIES RICHNESS	3	3	3	7	7	6	8	8	8	2	7	4	15	1	13	11	4	3	5	7	5