

Darrin Fresh Water Institute

AT LAKE GEORGE

**EURASIAN WATERMILFOIL MANAGEMENT
IN
LAKE GEORGE, NEW YORK**

prepared for

The Lake George Park Commission

by

Lawrence W. Eichler
Research Scientist

Eric A. Howe
Water Chemistry Technician
&

Charles W. Boylen
Associate Director

Darrin Fresh Water Institute
Rensselaer Polytechnic Institute
Troy, NY 12180-3590
Bolton Landing, NY 12814

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**EURASIAN WATERMILFOIL MANAGEMENT IN LAKE GEORGE
1997 PROGRAM REVIEW**

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EXECUTIVE SUMMARY

The Darrin Fresh Water Institute has conducted aquatic plant (macrophyte) assessments of Lake George since the early 1970s. With the discovery of Eurasian watermilfoil (*Myriophyllum spicatum* L.) in 1985, aquatic plant assessments took on an added role of plant management. Eurasian watermilfoil management activities based on physical control techniques (hand and suction harvesting and benthic barrier) were initiated in 1989. Management activities were supported by state, federal and local sources however, federal support for Eurasian watermilfoil management in Lake George ended in 1993.

In 1994, a proposal for integrated aquatic plant management was developed by the Darrin Fresh Water Institute (DFWI) and submitted to the Lake George Park Commission (LGPC). The proposal involved a cooperative effort by LGPC and DFWI personnel to apply physical control methods for aquatic plant management. In 1995, the LGPC initiated a contract with the DFWI for \$20000 per year for a three-year program incorporating hand harvesting, suction harvesting and benthic barrier. In 1997, funds were supplemented by a grant from the FUND for Lake George to the LGPC. This grant was divided between rehabilitation of the aging suction harvester and additional benthic barrier installation.

At the conclusion of the 1997 program, a total of 123 sites were identified where Eurasian watermilfoil had been reported on at least one occasion. A total of 111 sites have been managed for Eurasian watermilfoil in one or more years since the start of aquatic plant management efforts. Of these, 53 were cleared of Eurasian watermilfoil in 1997. Cleared, as used in this context, indicates removal of all visible milfoil plants, including roots. An additional 27 sites were found to be clear of Eurasian watermilfoil. At 5 sites, milfoil abundance was reduced, but density of milfoil growth precluded complete removal. At five locations, milfoil was observed for the first time. Thirty-nine sites require a more intensive management strategy than hand harvesting (e.g. suction harvesting or benthic barrier). Of these, thirteen sites currently have populations of Eurasian watermilfoil toward which no management activity has been directed.

The suction harvester was used for one location, Bell Point (M-75). The site was partially cleared of milfoil via a combination of hand and suction harvesting. The site was not completed due to failure of the suction harvester support vessel, which received damage and partially sank. A "raking" technique was also applied in place of suction harvesting at South Shelving Rock (M-76). This resulted in the partial removal of the watermilfoil population present at this site.

Benthic barrier maintenance was conducted at 5 locations (East Brook, Sunset Bay, Shepards Park, West Brook, and South Sawmill Bay). The barrier at each of these sites was inspected by divers and repairs and adjustments made as necessary. Repairs included moving barrier to close gaps between panels, cutting vent holes in the barrier material to release trapped gases, and placing additional stakes in the barrier material to secure it to the lake bottom.

At two locations, Congers Point and Harris Bay, all of the existing benthic barrier (21 panels of Aqua-Screen) was removed. These sites represent locations where adjacent milfoil populations have been reduced to maintenance levels, reducing the probability of re-introduction. The benthic barrier at these sites was installed in 1990, and on removal in 1997 remained in adequate condition to be reused. The Aqua Screen is beginning to show wear and probably can not be used again. One panel of Palco-Pond Liner was also removed from South Sawmill Bay. This site is proposed for herbicide (SONAR_{TM}) treatment in 1998. The Palco-Pond Liner was in excellent condition and should be reusable for a number of years. The lake bottom was devoid of aquatic plants in areas where the barrier had been. All of the barrier material was cleaned of sediment and attached plants prior to installation at South Jenkins Brook (M-98). Areas where barrier was removed should be inspected annually to protect against re-infestation by Eurasian watermilfoil.

Barrier installation occurred at one location (South Jenkins Brook, M-98). A total of 22 panels (7,700 ft²) of benthic barrier were installed. Hand harvesting was also conducted at the benthic barrier site to complete management efforts. Additional hand harvesting and barrier maintenance will be required in 1998 to assure the effectiveness of this management effort.

In 1997, a total of 5938 Eurasian watermilfoil plants were removed by hand harvesting at 53 locations. On average, 112 plants were removed from sites with milfoil present at hand harvestable levels. This compares with the 1996 program where 3973 milfoil plants were removed from 45 sites with an average of 88 plants removed per site. Coupled with the sites cleared of milfoil in past harvesting efforts, 80 sites or 65% of the recorded milfoil sites were free of milfoil at the conclusion of the 1997 effort.

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Introduction

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In 1994, a proposal for integrated aquatic plant management was developed by the Darrin Fresh Water Institute and submitted to the Lake George Park Commission. The proposal involved a cooperative effort by LGPC and DFWI personnel to apply physical control methods for aquatic plant control. In 1995, a three year program incorporating hand harvesting, suction harvesting and benthic barrier was initiated. The following sections describe the current status of Eurasian watermilfoil in Lake George, past management efforts, and management activities conducted during 1997.

Eurasian watermilfoil (*M. spicatum*) Locations

As of the end of 1997, a total of 123 sites have been identified which have had Eurasian watermilfoil (Table 1, Figure 1). Half of these sites are located in the southern basin, with high concentrations near human population centers and boat-use areas including: Lake George Village, Bolton Landing, and the southeastern shallow bays (Dunhams, Harris and Warner). In the north basin, clusters of Eurasian watermilfoil populations are found near Huletts Landing, Putnam, Hague, and the outlet.

Table 1. Listing of all known milfoil sites in Lake George and their density of growth, 1997 management activities and projected future management needs.

<u>Site #</u>	<u>Site Name</u>	<u>Density of Milfoil</u>	<u># of Milfoil Plants</u>	<u>1997 Action</u>	<u>Management Options</u>
1	NWB-Brook inflow	bed		observed	1
2	BB Congers Point	scattered	560	cleared	3
3	SW Congers Point	scattered/bed		observed	1
4	NW Sweetbriar Island	scattered		observed	2
5	West Green Island	scattered/mod.		observed	1
6	Sunset Bay	bed		observed	1
7	Shepard's Park	bed		observed	1
8	West Brook Delta	bed		observed	1
9	Million \$ Beach	scattered	3	cleared	3
10	East Brook Delta	scattered	189	cleared	3
11	S end Warner Bay	scattered	62	cleared	3
12	L.G. Outlet	scattered		observed	2
13	NE Mossy Point	bed		observed	1
14	SE Happy Family	scattered	32	cleared	3

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<u>Site #</u>	<u>Site Name</u>	<u>Density of Milfoil</u>	<u># of Milfoil Plants</u>	<u>1997 Action</u>	<u>Management Options</u>
15	Finkle Bk-FWI	scattered	17	cleared	3
16	Middleworth Bay	scattered/bed		observed	1
17	E end Echo Bay	scattered	56	cleared	3
18	Hague Boat Launch	scattered/mod.		observed	4
19	Dunham Bay	bed/scattered		observed	1
20	Huddle Bay	bed		observed	1
21	Sheriff Dock	bed		observed	1
22	NWB-Shadow Bay	scattered	151	cleared	3
23	L.G. Yacht Club	scattered/bed		observed	1
24	NWB- W Tongue Mt.	bed/moderate		observed	1
25	Basin Bay	scattered	629	cleared	3
26	SW Cannon Point	bed		observed	1
27	NW Cooper Point	bed		reduced	1
28	S Hearthstone	none	0	cleared	3
29	B-NE Tea Island	scattered	25	cleared	3
30	N Tea Is Bay	bed		observed	1
31	English Brook	scattered	84	cleared	3
32	Crosbyside-F37a	none	0	cleared	3
33	S Plum Point	none	0	cleared	3
34	Bay Plum & Woods Pt	none	0	cleared	3
35	NWB-Bay S Fan Pt	scattered	1	cleared	3
36	B-E Dark Bay	scattered	190	cleared	3
37	S Warner Bay	scattered	61	cleared	3
38	S Warner Bay -B	scattered	16	cleared	3
39	S Katskill Bay	scattered	2	cleared	3
40	B-S Red Rk Bay	scattered	5	cleared	3
41	Paradise Bay	bed/scattered		observed	1
42	Bolton Bay-T55	scattered	210	cleared	3
43	Bolton Bay-F54a	scattered	67	cleared	3
44	Bolton B-NE Bridge	scattered	117	cleared	3
45	Tiroga/Black Point	bed/scattered		observed	4
46	Leontine/Clay Island	scattered/bed	390	reduced	3
47	Smith Bay	scattered	267	cleared	3
48	Gull Bay	beds/scattered		observed	1
49	S Burnt Point	none	0	cleared	3
50	Clark Hollow T5	scattered	5	cleared	3
51	Eichlerville Bay T11n	bed		observed	1
52	Rogers Rock Beach	none	0	cleared	3
53	West Tongue Mt	bed		observed	1
54	Cook's Bay, IIL/F11	none	0	cleared	3
55	Indian Bay	scattered	3	cleared	3
56	S. Sawmill Bay	bed		observed	1
57	S. Green Island	moderate	289	reduced	3
58	Silver Bay	moderate		observed	2
59	Hondah Cottages	scattered	407	cleared	3
60	Camp Andrew Bay	scattered/bed		observed	1
61	Harbor Is-Moonlight	scattered/mod.		observed	1
62	Marine Village/F-40	scattered	1	cleared	3
63	S. Agnes Island	scattered	24	cleared	3

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<u>Site #</u>	<u>Site Name</u>	<u>Density of Milfoil</u>	<u># of Milfoil Plants</u>	<u>1997 Action</u>	<u>Management Options¹</u>
64	Three Brothers Island	scattered	1	cleared	3
65	W. of 3 Bros. Island	none	0	cleared	3
66	N. Sawmill Bay	bed		observed	1
67	Bluff Head Creek/T8	scattered	1	cleared	3
68	Rock Dunder Island	scattered	37	cleared	3
69	Kitchal Bay Huletts	scattered	1	cleared	3
70	S Trib W Halfway Is	scattered	1	cleared	3
71	Hague Brook/T86	bed/scattered		observed	1
72	S Cooks Bay/T89	scattered	9	cleared	3
73	Trib Dark Bay/T91A	scattered	5	cleared	3
74	N. Meadow Point	scattered	15	cleared	3
75	Bell Point	scattered	655	suction harvest	2
76	S Shelving Rock Pt	bed		suction harvest	2
77	Walker Point	none	0	cleared	3
78	B. N. W. Tongue Mt.	scattered	405	cleared	3
79	Shore S. Bear Point	scattered	3	cleared	3
80	Bay S. Bear Point	scattered	2	cleared	3
81	Butternut Brook	none	0	cleared	3
82	Barber Bay/T-22	scattered	9	cleared	3
83	Van Warmer Bay	none	0	cleared	3
84	Harris Bay Inlet	scattered	29	cleared	3
85	Dunham Bay Inlet	scattered	18	cleared	3
86	East Shore/T-36d	none	0	cleared	3
87	Crosbyside/T-37b	none	0	cleared	3
88	Crosbyside/T-37c	none	0	cleared	3
89	Crosbyside culvert	none	0	cleared	3
90	S Tea Is culvert	scattered	1	cleared	3
91	Harris Bay - E. side	bed/scattered		observed	1
92	B. E Hens & Chicks Is	scattered	61	cleared	3
93	East of Refuge Island	scattered	18	cleared	3
94	NW 3 Sirens Island	none	0	cleared	3
95	NWB Head of Bay	none	0	cleared	3
96	Harris Bay/mid-bay	scattered/bed		observed	1
97	W. Side Clay Island	scattered	1	cleared	3
98	South Jenkins Brook	bed		benthic barrier	3
99	Holman Hill Creek	scattered	81	cleared	3
100	Temple Island	scattered	1	cleared	3
101	Brook. N Green Point	none	0	cleared	3
102	S Trib. 5 Mile Mt. Bk.	none	0	cleared	3
103	N N Meadow Point.	none	0	cleared	3
104	Assembly Pt. W. Bay	none	0	cleared	3
105	Assembly Pt. NW	none	0	cleared	3
106	Assembly SE Bay	none	0	cleared	3
107	Elizabeth Island	none	0	cleared	3
108	Harris Bay Culvert	bed		observed	1
109	SW Happy Family Is.	scattered	346	reduced	3
110	Diamond Point	none	0	cleared	3
111	NW Bay-NE Walker Pt.	none	0	cleared	3
112	Whale Rock-E. Agnes Is.	scattered/bed		observed	2

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<u>Site #</u>	<u>Site Name</u>	<u>Density of Milfoil</u>	<u># of Milfoil Plants</u>	<u>1997 Action</u>	<u>Management Options¹</u>
113	Diamond Island	scattered/mod.	248	reduced	3
114	Sandy Bay-Mooring Post	scattered/mod.		observed	2
115	Cape Cod Village Bay	none	0	Cleared	3
116	Holman Hill Creek-N	scattered	92	Cleared	3
117	Glenburnie-Blairs Bay	bed		observed	3
118	Blairs Bay-North	scattered	20	cleared	3
119	E Side HBYC	scattered	4	cleared	3
120	N Warner Bay Culvert (T28)	scattered	1	cleared	3
121	East Shore (T36e)	scattered	4	cleared	3
122	Still Bay	scattered	6	cleared	3
123	West Flirtation Island	small bed		observed	1

- ¹ Management:
- 1- Dense growth requiring intensive management efforts (e.g. benthic barrier)
 - 2- Moderate growth requiring management efforts (e.g. suction harvest)
 - 3- Scattered growth best managed by hand harvesting
 - 4- Site characteristics not suitable for physical control

MAT – Benthic Barrier

TNTC = Too Numerous To Count

Descriptions of Eurasian watermilfoil Sites

Three different designations for the degree of milfoil infestation are used in the following summaries; beds, moderate density, and scattered plants. Beds are considered to be areas where 50 percent or more of the total macrophyte community by percent cover was milfoil. Moderate density areas are considered to be communities composed of significant amounts of milfoil, but totaling less than 50 percent cover. Zones of scattered plants were defined as macrophyte communities composed of less than 10 percent milfoil as determined by percent cover estimates.

Northwest Bay (M-1). The number of Eurasian watermilfoil plants have increased at this site since its discovery in 1986, and the bed has also increased in size to cover a substantial portion of the littoral zone. This site has fine, silty, organic-rich bottom sediments, due to wetland runoff from Northwest Bay Brook and wetland. Slope is moderately flat, except adjacent to the navigation channel into the wetland. The once diverse native aquatic flora has become severely impacted by the development of the dense bed of Eurasian watermilfoil. No management has occurred at this site.

Bolton Bay at Conger's Point (M-2). This site has included a small area with moderately dense growth of milfoil plants, a nearby small dense bed, and an extensive area of low density scattered plants throughout this small bay. The bottom is silty, the slope moderately flat. Heavy boat traffic is found in the adjacent open water. Benthic barrier material was installed over the dense bed growth at this site during 1990. This barrier was removed and relocated elsewhere in 1997. Areas of moderate and low-density milfoil growth were also harvested in 1997.

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Bolton Bay SW of Conger's Point (M-3). Dense stands of milfoil were found among the docks of a marina, with adjacent areas of low to moderate density plants among the docks. This area has heavy boat traffic both among the docks, and in the adjacent open water area. Approximately 50 meters of shoreline was affected. This site was suction harvested in 1991, however substantial areas of moderate and low-density milfoil growth remain. Heavy boat traffic limits diver access to this site. No management occurred here in 1997.

Huddle Bay NW of Sweetbriar Is (M-4). Few scattered plants were found around the docks of a marina (low density) and commercial establishments (low to moderate density). The bottom is silty, and the slope is shallow. Curly-leaf pondweed (*Potamogeton crispus*) was also observed here. Boat traffic is heavy among the docks and in this small embayment. Approximately 100 m of shoreline was affected. The moderate density areas were suction harvested and the scattered plants were hand-harvested in 1991. Scattered and moderate density areas of milfoil plants were present at this location in 1997.

Sawmill Bay W shore of Green Is (M-5). Moderate density milfoil growth was found near a boat ramp for NYSDEC, and around a marine railway at an adjacent private facility. The bottom is composed of mixed silt and rubble, with numerous bottom obstructions. Boat traffic in the adjacent waterway and among the docks is heavy. The milfoil population at this site was managed via suction harvesting in the fall of 1990, however the bottom obstructions severely hampered this operation. Surveys in 1996 indicate the need for additional management efforts at this site. This location is within Sawmill Bay, a site proposed for treatment with the herbicide Sonar™ in 1998.

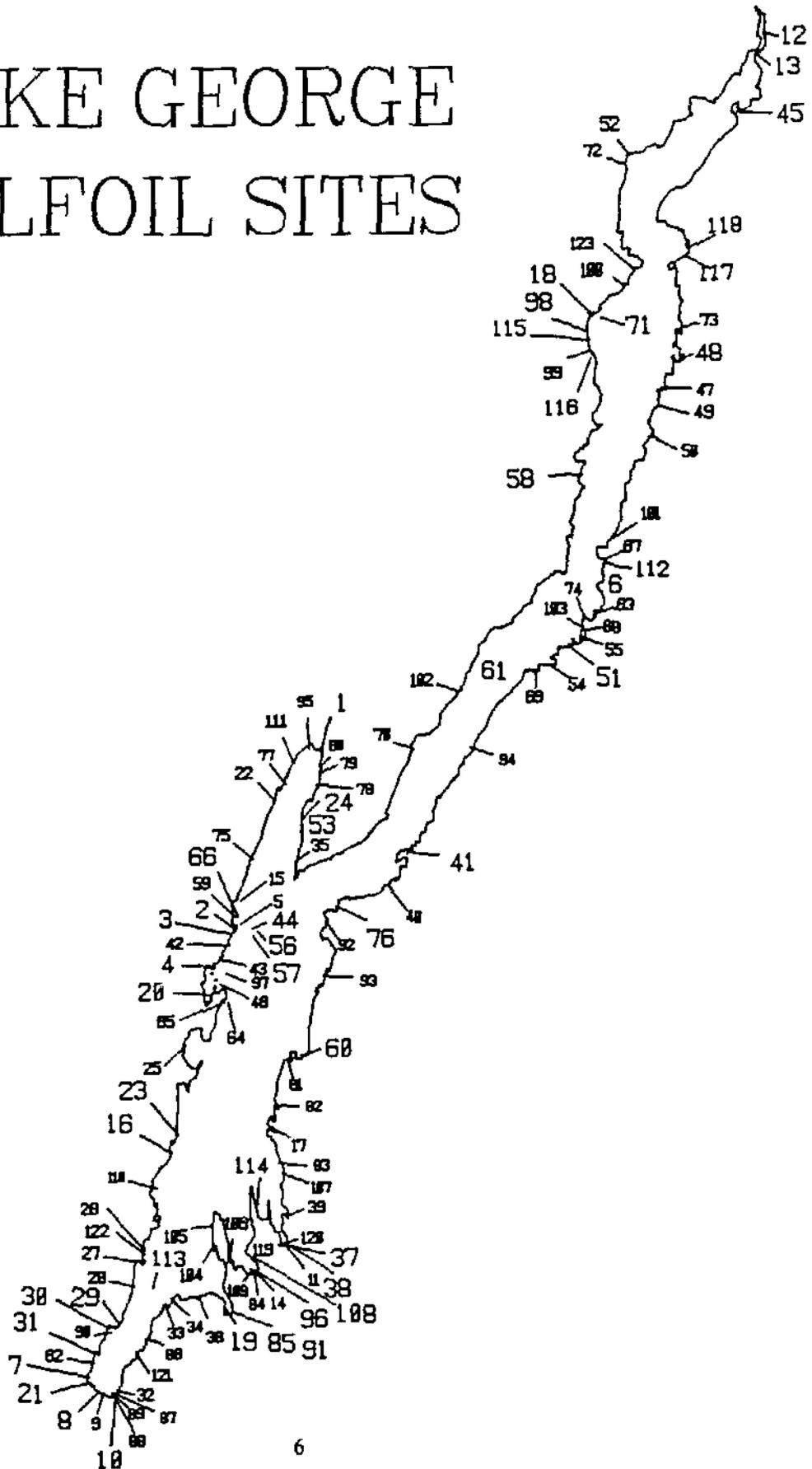
Sunset Bay (M-6). The moderate density area surrounding the small bed of milfoil reported in 1989 has increased in density and merged with the small milfoil bed. A majority of this area was covered with benthic barrier in 1992 and 1993. The remainder of this small bay contains scattered plants. A small patch of scattered plants to the north of the principal milfoil area has increased to moderate density. The slope is gradual, with a silty bottom. Eurasian watermilfoil was found from 1 to 4 meters of depth and the bed was in 2 to 3 meters depth. Substantial accumulations of silt on top of the benthic barrier were observed in 1997.

Shepard's Park (M-7). The milfoil beds increased in size from 1989 until 1992, and a large population of Curly-leaf Pondweed was also observed. The three beds were controlled using benthic barrier and suction harvesting in 1992. Much of the remaining area had either low-density scattered plants, or small clumps of moderate to dense growths, too small to be considered a bed. Hand harvesting removed a number of scattered plants. Sand imported for the public swimming beach was the predominant bottom sediment, but some areas of exposed silt were found at deeper depths. This site is a heavily used public beach. Additional panels (3500 ft²) of benthic barrier were installed in 1996 to cover the majority of the remaining dense bed areas. At the end of the season,

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Figure 1. Map of Lake George showing the location of all known milfoil sites.

LAKE GEORGE MILFOIL SITES



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an additional small bed was observed at the foot of Amherst Street at the northern perimeter of the beach. Future management efforts at this site are required.

West Brook Delta (M-8). Dense and moderately dense areas of milfoil growth extended in a semicircle from the outlet of West Brook to the western end of the cement seawall, with some low density scattered plants. Numerous Curly-leaf Pondweed plants were also found. This is a heavy use area, which is highly disturbed due to sediment deposition. Eurasian watermilfoil was found in a band from 2 to 4 meters depth, on the delta formed where West Brook enters Lake George. In 1992 and 1993 benthic barrier was installed in this area, however groundwater and surface water flow negatively effected the stability of the benthic barrier in this area. Barrier material was also frequently damaged as a result of boat anchors. Slope is moderately steep, with sediment grading from sand in the shallows to deep organic silt beyond 5 meters. Native plant growth was also extensive. Management and maintenance is still required at this site.

Million Dollar Beach (M-9). This site had a string of low-density scattered plants between East and West Brook deltas. The plants were located on the deep edge of a public swimming beach with the majority of plants located proximate to West Brook. Sediments grade from sand on the beach, to rock and silt on the steep slope beyond the beach. The steepness of the slope at this site restricts the potential growth of Eurasian watermilfoil. Hand harvesting has been conducted on a regular basis at this site with 198 plants removed to clear the site in 1996. A total of 3 plants were removed from this site in 1997.

East Brook Delta (M-10). There was a moderately large dense bed, which was covered with benthic barrier material in 1992-3. An area of moderate to low density scattered plants surrounds the bottom barrier material, requiring further effort to control. Barrier material was also frequently damaged as a result of boats anchoring in this area. As with West Brook Delta, the Eurasian watermilfoil was found in a band from 2 to 4 meters of depth, on the delta formed by the drainage of East Brook into Lake George. Curly-leaf Pondweed was also found at this site. Sediments grade from sand in the shallow areas, to thick organic silts in deeper areas. Native plant growth was also extensive. The site is adjacent to Million Dollar public swimming beach. In 1996, slits were cut in the mat to vent gases and the general condition of the mat was good. Several panels of benthic barrier were relocated at this site and hand harvesting conducted to complete management. Frequent maintenance visits (annual) to this location are recommended. A total of 189 plants were hand harvested at this site in 1997 in addition to routine maintenance of the benthic barrier.

Warner Bay, South End (M-11). The entire southern, inner bay had very low-density scattered plants. This site description is also applicable to M-37. The slope in this area is flat and the bottom is highly organic silt. Water transparency in the bay tends to be less than the average for Lake George. This site also supports *M. sibiricum* (formerly taxonomically classified as *M. exalbescens*), so care should be taken in identifying the extent of Eurasian watermilfoil. Warner Bay is an area of intense boating activity, but

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does have a restrictive speed limit. This area was cleared of milfoil in 1991 through a combination of hand harvesting and suction harvesting. Scattered milfoil plants were harvested in this area in 1993, 1995, 1996, and 1997. Small pockets of moderate density growth as well as larger areas of scattered plants will require management. Regrowth will require continued maintenance.

Lake George Outlet (M-12). The 1996 survey indicated low-density scattered plants throughout the outlet region, between the natural dam (end of lake) and the end of navigation. Since *M. sibiricum* is also found at this site, special care is indicated in evaluating the extent of Eurasian watermilfoil. Water clarity was very poor making survey work difficult. Given the shallow, silty nature of the outlet area, it is an ideal location for the spread of Eurasian watermilfoil. No management activities have occurred at this site.

Mossy Point Boat Launch (M-13). The NYSDEC boat launch facility had dense beds around the southern docks, with moderate density areas in the launch ramp. Eurasian watermilfoil plants were also scattered at the fringes and into an adjacent wetland. The bottom becomes very rocky out from the boat launch facility, restricting the expansion of the milfoil community. The slope in this area was slight, and the bottom very silty around the dock facility and wetland. Water clarity tends to be lower than average for Lake George. This site has heavy boat traffic due to the boat launch facility and its proximity to the navigable channel to the outlet region. Benthic barrier material was installed over the milfoil bed areas at this site in 1990. Barrier removal and hand harvesting was done in the year following the barrier installation. Scattered plants were found in follow up surveys in 1996 with high-density growth on the fringes of the adjacent wetland.

Harris Bay - Happy Family Islands (M-14). A small bed in mid-channel and numerous scattered plants in the marina were originally observed. *Myriophyllum alterniflorum*, currently considered a rare plant in New York State, was also found at this location. Slope is shallow, bottom silty. A moderate amount of boat traffic occurs in this area as a result of the adjacent marina, but boat speed is restricted. Benthic barrier material was installed over the small bed in 1990, and a portion removed in 1993. The remainder of the benthic barrier was removed in 1997. Hand harvesting in 1997 removed 32 plants scattered over the area. This year was the first year since 1993 in which plants had been found present here.

Sawmill Bay - Outflow of Finkle Brook (M-15). This was one area of moderately dense scattered plants of limited areal extent. The slope is flat, with sediments grading from sand in the shallows to silt in deeper water. The plants were growing on the edge of the delta formed by the inflow of Finkle Brook to Lake George. All of the Eurasian watermilfoil at this site was removed as part of hand harvesting operations from 1989 to the present.

Middleworth Bay (M-16). Low to moderate density scattered Eurasian watermilfoil was found in both arms of this bay, in among an unusually dense growth of native plants. The

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southern arm of this bay had the largest amount of milfoil. Bottom slope is flat, with a silty bottom. Curly-leaf Pondweed was observed in the north arm of the bay. The south arm of the bay was cleared of milfoil in 1991 through hand and suction harvesting. Surveys in 1995 found a large number of scattered milfoil plants in the south arm of the bay around the docks of a marina, requiring future management. In 1996, this scattered population had grown to bed density.

Echo Bay - East End (M-17). Scattered Eurasian watermilfoil was observed at this location in the 1991 survey, after not being found in 1989. The majority of plants were found at the eastern end of the bay around and adjacent to a marina. This area is unusually silty, and supports large growths of benthic filamentous algae. Some low-density scattered plants were found in shallow water, in the interior portion of the bay in 1988. Plants were removed by hand harvesting in 1991, 1993, 1995, 1996 and 1997. *Potamogeton crispus* was also present here in 1997.

Hague Boat Launch (M-18). The area of Eurasian watermilfoil growth is restricted to the boat slip for the boat launch, where the bottom is silty. Low-to-moderate density scattered Eurasian watermilfoil and Curly-leaf Pondweed were observed. The boat launch also supports a dense, near-nuisance growth of native plants and filamentous algae. No management has occurred at this site.

Dunham Bay (M-19). The inner bay has had Eurasian watermilfoil growth to 4 meters of depth. Scattered plants of low to moderate density occurred from the former bed site towards the wetland, and in shallow water throughout the inner bay. This is one location in which the Lake George Park Commission (LGPC) installed benthic barrier in 1986 over a dense bed of milfoil. The slope is uniformly gentle, with a bottom of predominantly silty material. Water clarity is reduced by the wetland drainage. Boat traffic is moderately heavy at this site. A small bed has developed adjacent to the matted area on the eastern side. Scattered growth of Eurasian watermilfoil to the northwest of the bridge was removed via hand harvesting in 1997. Moderate density growth of milfoil is found to the west of the barrier material, with sediment buildup on the barrier supporting a number of milfoil plants as well.

Huddle Bay (M-20). Currently the largest milfoil beds in Lake George, the two beds in Huddle Bay are located along the eastern portion of the bay in water depth of from 1 to 4 meters. Extensive areas of moderate to low density scattered plants occurred throughout the eastern half of the bay, and in deeper water (5 to 6 meters) past Hiawatha Island. The populations at this site have changed little since 1988. Slope is slight, with deep silty substrates in water depths greater than 2 meters. No management has occurred at this site.

Sheriff Dock Area (M-21). This former bed area was reduced to a zone of moderate density scattered plants, in the zone of water deeper than the benthic mats installed by the LGPC in 1986. Further expansion is restricted by depth however a zone of dense milfoil growth at the deep margins of the benthic barrier is now evident possibly growing on

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accumulated silt at the margins of the barrier. Scattered and moderate density plants were found around both benthic mats in shallower waters. Inspection of the mat in 1995 revealed substantial silt deposits on the surface of the mat, particularly at the end nearest the outfall of the Sheriff's Dock storm sewer. Scattered plants were also found growing on the surface of the mats and in seams of the barrier material. The mat material was also showing signs of deterioration with large sections removed when new docks were installed. Curly-leaf Pondweed was also found at this site. Slope is moderately steep, with bottom sediments generally sand and silt. This area has extremely high traffic, but also has a restricted speed limit. No management, other than that conducted by the I.G.P.C. has occurred at this site.

Shadow Bay (M-22). Initial surveys in 1989 found this bay almost entirely filled by a Eurasian watermilfoil dense bed, with few scattered plants. Being a quiet, sheltered area, it is one site at which Eurasian watermilfoil flowers and fruits have been observed. Curly-leaf Pondweed was also observed. Slope is moderately flat, with bottom sediments predominantly silt. The dense bed at this site was covered with benthic barrier material in 1990. Hand harvesting has continued, on an annual basis, since the removal of the bottom barrier (1991).

Lake George Yacht Club (M-23). This site had low to moderate density scattered plants among the docks, with little or no vegetation found beyond the dock area. Curly-leaf Pondweed was also observed in moderate densities. This area has heavy boat traffic. Slope is moderately steep, with variable bottom sediments. The dense milfoil growth at this site was covered with benthic barrier and the scattered plants were hand-harvested in 1990 - 1993. Hand harvesting of this site was discontinued in 1993 and substantial regrowth has occurred. Moderate to dense growth of milfoil is now found in the swim area. This site is suitable for installation of benthic barrier, but once removed, annual maintenance appears critical.

NW Bay - Bay Between Fan and Bear Point (M-24). This small bay currently has low, moderate and dense growth areas of Eurasian watermilfoil. Scattered growth of Curly-leaf Pondweed was also observed. Slope is moderately flat, with highly variable bottom sediments from rocks to silt. The bottom also has numerous logs and other bottom obstructions. All of the Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project. Intermittent hand-harvesting efforts since that time have not kept this site in control. Density levels now suggest more intensive management efforts. This location is proposed for treatment with the herbicide Sonar™ in 1998.

Basin Bay - North tributary (M-25). Scattered plants of Eurasian watermilfoil were found as a result of the survey, along with numerous Curly-leaf Pondweed. Plants were found on the delta formed by the inflow of an unnamed brook. The slope was moderately flat out to 4 meters depth, at which point the slope increased greatly. Bottom sediments graded from sand to silt. Eurasian watermilfoil was removed from this site as part of the

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1989-90 hand harvesting project and harvesting has continued through 1997, maintaining milfoil populations at a maintenance level.

Bay SW of Cannon Point (M-26). This is a small bay with a moderate size bed of Eurasian watermilfoil and an additional area of moderate density scattered plants that is substantially larger than the area of the bed. An abundant population of Curly-leaf Pondweed was also found. A few individuals of *M. alterniflorum* were also found. Slope is moderately flat, with a silty bottom. Some boat traffic occurs in this area as a result of a sailboat mooring area, and docks for a motel complex constitute the activities using this site. Benthic barrier material was installed over the milfoil bed at this site in 1990 and limited suction harvesting conducted in a portion of the moderate density areas. Barrier was removed in 1991 and without maintenance activities, substantial regrowth of *P. crispus* and *M. spicatum* has occurred since that time. This site currently supports a large area of dense growth of Eurasian watermilfoil.

Bay NW of Cooper Point (M-27). Scattered plants were found near the docks of a marina, at the north end of the bay and in the southwest corner of the bay adjacent to the seawall. An area of low growing moderately dense plants was also observed in the wetlands at the northern end. Eurasian watermilfoil was removed from this site as part of the 1989, 1990, 1993, 1995 and 1996 hand harvesting projects. The short stature of the plants in the wetland area and the shallow depth (0.5 meters) make hand harvesting of plants in this location difficult. A small area of dense growth was observed in 1996, which may be a good candidate for barrier in the future. Slope is flat, and the bottom is silty.

Bay S of Hearthstone (M-28). The only Eurasian watermilfoil shoot found was removed for a voucher specimen in 1987. No Eurasian watermilfoil was found since that date. The bottom was moderately steep, with sediments grading from sand to silt.

Bay NE of Tea Is (M-29). Moderate density Eurasian watermilfoil is found near and to the north of the tributary outlet. A few low-density scattered Eurasian watermilfoil plants were also found among an extensive area of Curly-leaf Pondweed. Slope is moderately steep, with sediments grading from sand to silt. Suction harvesting was used to manage the milfoil at this site in 1990, with hand harvesting conducted in 1991 and 1992. No maintenance occurred between 1992 and 1995. Moderate density growth required intensive hand harvesting in 1996. The site was cleared of 25 plants via hand harvesting in 1997.

North Tea Is Bay (M-30). A large area of moderate to high-density plants was found around the periphery of this bay, in 1 to 4 meters of water. A dense bed had formed in 2-3 meters water depth. A significant amount of Curly-leaf Pondweed was also present. The bottom is generally silty with a flat slope. No management has occurred at this site, however the large area of dense milfoil growth suggests an intensive management strategy.

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English Brook (M-31). A limited area of low density scattered Eurasian watermilfoil plants were found south of the delta. However, all of the Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting projects. In 1993, scattered milfoil plants were cleared from this area, however, a small area of moderate density growth of milfoil plants was found at this time. Sediments grade from sand to silt, with a moderately flat slope. This area is in a zone of heavy boat traffic. From 1995 through 1996, the scattered plants were removed by hand harvesting, however the moderate density area was only reduced in density. Hand harvesting removed 84 plants to clear this site in 1997.

Crosbyside Culvert T-37a (M-32). A single Eurasian watermilfoil shoot was harvested for a voucher specimen in 1987. No Eurasian watermilfoil was found in 1989 or 1990. During the 1991 tributary survey scattered milfoil plants were discovered at this site and harvested. The plants were growing to 5m depth directly in front of Usher's Park beach and in front of a white boathouse to the south of the beach. Twelve milfoil plants were found and removed in 1995 and an additional 4 removed in 1996. There were no plants found here in 1997. The slope is moderately steep, and sediment is sand and silt.

South of Plum Point (M-33). Eurasian watermilfoil plants were removed for voucher specimens in 1987, and none have been sighted since that time. The bottom is predominantly sand and cobblestone, with a moderately flat slope.

Bay Between Plum Point and Woods Point (M-34). Low density scattered Eurasian watermilfoil plants along the shore north of the stream in 1987 were removed for voucher specimens. Eurasian watermilfoil was not sighted in 1989 or 1990, but 2 additional plants were removed during the 1993 and 1995 surveys. No milfoil was found at this site in 1996 or 1997. The slope is moderately steep, with a sandy bottom.

NW Bay - Bay South of Fan Point (M-35). All Eurasian watermilfoil stems found were harvested for voucher specimens in 1987. No plants were found in 1989, however a single plant was found and removed as a voucher specimen in 1990, and 2 plants were removed in 1992. No milfoil was observed at this site in 1995, however a single plant was found and removed in 1996 as well as in 1997. This steep and rocky site is an unlikely Eurasian watermilfoil site.

Bay E of Dark Bay (M-36). An area of low density scattered Eurasian watermilfoil plants were found on the eastern side of the bay in 1988. In 1989, a small bed within a boat slip, as well as a few scattered plants were observed. This steep slope site has a sandy/rocky bottom. The scattered plants at this site were removed by hand harvesting in 1989 and 1990. The small bed was covered with benthic barrier in 1990. Hand harvesting at this site has continued since the removal of the benthic barrier with only limited regrowth observed until 1997, when a substantial number of plants (190) were removed from the boat slip.

South Warner Bay culvert (M-37). [See site M-11].

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North Warner Bay Culvert (M-38). In 1990 this site was suction harvested, and in 1991 the area was hand harvested. Due to the dense growth of native macrophytes and the presence of native watermilfoil, not all of the Eurasian watermilfoil in the area was removed. In 1992 this site was resurveyed and an area of moderately scattered plants was discovered. In 1993, this site was upgraded to its current description of moderate density growth of Eurasian watermilfoil. In 1997 hand harvesting cleared the milfoil plants in this area. Maintenance visits should continue on an annual basis. The slope at this site is flat, and the sediment is soft silt.

South Kattskill Bay (M-39). Eurasian watermilfoil was found in 1 meter of depth, behind a boathouse in an area of lily pads on the southern shore. Slope is moderately flat, with a mixture of sand and silt substrates. All of the Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project. Several plants have been taken from this site in subsequent years although none were found in 1995 and very few plants were removed in 1996 and 1997.

Bay South of Red Rock Bay (M-40). There was a small area of low density scattered Eurasian watermilfoil plants. A moderately dense area of Curly-leaf Pondweed was also found amongst a highly diverse community of native plants. Slope is flat, with an organic silt substrate. The Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project. Hand harvesting has continued during the recent revisits with 3 milfoil plants removed in 1995 and 5 in 1996 and 1997.

Paradise Bay (M-41). There was a moderate-sized area of low density scattered plants in the northern arm of the bay. Eurasian watermilfoil was found at depths of from 1 to 4 meters. The native plant community appears disturbed. This area receives heavy boat traffic. Slope is moderately flat, with a silty substrate. Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project. Hand harvesting continued at this site until 1992. Since 1993, no maintenance has occurred and growth of milfoil has increased to a bed density with large areas of moderate to scattered density plants within this enclosed bay. Due to its sheltered nature and distance from residential shorelines, this site is also proposed for treatment with herbicide, SonarTM, in 1998.

Bolton Bay (M-42). A small area of low density scattered Eurasian watermilfoil plants had been found at this site, but, all the plants were collected for voucher specimens in 1987. No Eurasian watermilfoil was observed in 1989; however, several hundred plants were removed by hand harvesting 1993. In 1995, 251 milfoil plants were removed to clear this location. An additional 40 plants were removed in 1996. In 1997, the population had increased to 210 hand harvested plants. This site is adjacent to a small tributary south of Bixby Point. Bottom slope is gradual and sediments grade from sand to silt.

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Bolton Bay (M-43). A small area of low density scattered Eurasian watermilfoil plants were found around a submerged dock crib at the foot of Mohican Road. The sediment is a mixture of rock and silt, with sand in shallow areas, the slope is moderately flat. Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project. In 1993, over 300 milfoil plants were removed by hand harvesting at this site. In 1995, all milfoil plants found (58) were removed. In 1996, an additional 91 milfoil plants were harvested to clear this location. The population was cleared in 1997 with the removal of 67 plants scattered across the bay.

Bolton Bay - NE of Bridge (M-44). This site was found in 1988, the area has a small dense bed. The bottom is silty, grading to sand in the boat channel. The site experiences heavy boat traffic under the adjacent bridge. The milfoil at this site was managed via suction harvesting in 1990. Hand harvesting was conducted in 1992, however moderately dense growth of Eurasian watermilfoil was reported for this site in 1993. In 1995, this site remained a small moderately dense growth area of milfoil. Suction harvesting was employed to clear this site in 1996, with hand harvesting included as a follow-up measure. Frequent maintenance of this site may prove necessary. A total of 117 plants were hand harvested to clear the site in 1997.

Tiroga Point Channel (M-45). Moderate-density scattered Eurasian watermilfoil was found along with *M. verticillatum* in this shallow man-made channel, draining a wetland. The depth was 1-2 meters, with a bottom consisting of organic silt. No management has occurred at this site. Water clarity and quality in this channel is much poorer than the norm for Lake George.

Leontine Island (M-46). A few Eurasian watermilfoil plants were found on the reef to the east of Leontine Island in 1989, and all plants were removed. In 1990, five plants were found along the shoreline near the southern end of the reef. The plants were removed as voucher specimens. In 1993, 255 plants were removed by hand from this site. A small number (19) of milfoil plants were found and removed in 1995. The slope is moderately steep, with a rocky bottom. In 1996, several small dense patches of milfoil were found and removed from areas adjacent to anchors for navigation markers on this reef. Hand harvesting in 1997 removed nearly 400 plants, but the population was only reduced. There are heavily scattered areas of growth on both the northern and southern ends of the reef.

Smith Bay (M-47). In 1988, a single plant of Eurasian watermilfoil was found and removed from this moderately sloping, silty bay. Moderately dense Curly-leaf Pondweed was found in 1989, but no Eurasian watermilfoil was observed. In 1990, a small area of moderate density growth of milfoil was observed with an outlying area of scattered plants. These plants were in depths of 3 to 4 meters. The milfoil was managed at this site in 1990 with suction harvesting. During follow up visits in 1993 and 1995, hand harvesting removed 33 and 157 milfoil plants, respectively. In 1996, 176 milfoil plants were removed, primarily along the southern shore of the bay in an area remote from that suction harvested in 1990. The 267 milfoil plants removed in 1997 were scattered near

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the base of a steep drop off on the southeastern shore of the bay, about 5 meters deep. A few plants were also removed along the opposite shore on the northern side of the bay.

Gull Bay (M-48). Numerous low-density scattered Eurasian watermilfoil plants were found off of the stream adjacent to the public beach in this bay. Curly-leaf Pondweed was also found at this location. During revisits to this site a small bed of Eurasian watermilfoil was found at the end of a "1" dock. The slope was moderately flat, the bottom grading from sand in the shallows to silt past 3 meters in depth. The Eurasian watermilfoil was managed at this site as part of the 1989 hand-harvesting project. In 1990, both hand and suction harvesting were used for plant management. A small moderate density patch and large area of scattered milfoil growth was observed in 1995. In 1997, three large areas of dense growth were observed. Two of these were near the speed restriction buoys at the mouth of the bay. The remaining bed was centrally located in the bay, though not near the area that was suction harvested in 1990.

South of Burnt Point (M-49). A single specimen of Eurasian watermilfoil was found, and collected as a voucher specimen, in 1988. No additional Eurasian watermilfoil has been found since 1989. The slope was moderate at this site, with a rocky bottom.

Clark Hollow Bay Brook (M-50). Scattered Eurasian watermilfoil plants were found in 2-3 meters depth parallel to the shoreline in 1989. The slope is moderately flat, with a bottom grading from sand in shallow water to silt in deeper water. All of the Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project, and during subsequent revisits. Five milfoil plants were removed in 1997.

Eichlerville Bay (M-51). Moderate and low-density Eurasian watermilfoil plants were found at this site. The majority of plants were in two areas along the outer fringe of the delta, in depths of 3-4 meters. The bottom slope was gradual and sediments consisted mainly of silt with large amounts of detrital material. Milfoil at this site was managed via suction harvesting in 1990, and hand harvesting in 1991 and 1992. Since that time, limited maintenance has occurred and the milfoil populations are similar to those observed in 1989, with dense growth of milfoil observed at the deep margin of the littoral zone.

Rogers Rock Park Beach (M-52). Low density scattered Eurasian watermilfoil plants were found along the boat mooring line at the park, adjacent to the public swimming beach, and around the boat launch ramp. The slope at this site was flat, with a predominantly sandy substrate. The plants were restricted to depths of 1-2 meters. All of the Eurasian watermilfoil was removed from this site as part of the 1989 and 1990 hand harvesting project. No milfoil plants have been found at this site through 1997.

Southwest Tongue Mountain [Clay Bay] (M-53). Numerous low-density scattered Eurasian watermilfoil plants can still be found in this small bay immediately to the south of the first-named West Tongue Mountain site (M-24). The bottom is composed of clay and silt surrounding numerous exposed boulders. Water clarity is unusually poor due to

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and eroding clay bank at this location. Slope is moderately flat. Eurasian watermilfoil has been removed from this site on an annual basis since 1989, with only a single plant removed in 1996.

Cooks Bay, Hulett's Landing (M-54). Nine milfoil plants were removed from this site in 1993, and a single Eurasian watermilfoil plant was found and collected in 1990. No Eurasian watermilfoil was found at this site in 1989. All milfoil plants were found in the northeast shore of the bay near a small tributary. The slope is gradual with sediment predominantly sand and silt. In 1995, 4 milfoil plants were found and removed. No Eurasian watermilfoil was found in 1996 or 1997.

Indian Bay, Hulett's Landing (M-55). Two Eurasian watermilfoil plants were found by a local resident, and sent to the Fresh Water Institute for identification in 1988. Slope in this bay is gradual with a silt/sand bottom adjacent to the tributary with a highly diverse native plant community. No Eurasian watermilfoil has been found since 1988.

South Sawmill Bay (M-56). A large dense bed of Eurasian watermilfoil was found southeast of Veteran's Memorial Park in the middle of Sawmill Bay, in 3-5 meters water depth. Adjacent areas of moderately dense and low-density scattered plants were also observed. Benthic barrier was installed in both 1991 and 1992, however considerable amounts of milfoil remain in the area predominantly to the east and north of the matted zone. In 1997, barrier at this location was inspected and found to be in good condition with small quantities of silt present. This location is within Sawmill Bay, a site proposed for treatment with the herbicide Sonar™ in 1998.

South End, Green Island (M-57). Moderate to bed density Eurasian watermilfoil was found within the dock complex at the extreme south end of Green Island. Water depth within the dock area is 2-3 meters, with gradually sloping bottom and soft silty sediments. Numerous obstructions including pipes and old pieces of dock cribbing were found at this site. The milfoil at this site was managed via suction harvesting in 1990. By 1993, the area that was harvested had returned to bed density, and inside the east crib dock a small, new area of moderately dense milfoil has been discovered. This condition was observed in 1995. In 1996, suction harvesting and hand harvesting were used to manage this location. Annual maintenance is recommended. A total of 289 milfoil plants were hand harvested in 1997, and site conditions may warrant suction harvesting in 1998.

Silver Bay (M-58). A large number of scattered Eurasian watermilfoil plants were found within the dock and boathouse complex in Silver Bay in 1990, along with a few individuals of Curly-leaf Pondweed. Water depth in this area ranged from 1 to 2 meters. The sediment in this area is sand to clay with a gradually sloping bottom. Milfoil was removed from this area by hand harvesting in 1991. In 1995 and 1996, a small bed of milfoil and a large area of scattered plants were observed at this location.

Hondah Cottages (M-59). Approximately 550 low-density scattered Eurasian watermilfoil plants were found and removed from among the docks south of the Veteran's

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Memorial Park beach in 1993. Sediments in this area were sand and silt and the bottom slope is gradual. Boat traffic in this area is high. In 1995, 259 milfoil plants were removed. In 1996, 283 milfoil plants were removed. In 1997, 407 milfoil plants were removed via hand harvesting. This location is within Sawmill Bay, a site proposed for treatment with the herbicide Sonar™ in 1998.

Camp Andrew Bay (M-60). Moderate and low density Eurasian watermilfoil plants were observed in two distinct areas at this location in 1989. Milfoil was found in depths of from 2-3 meters. The bottom sediments are silt and the slope is gradual. Eurasian watermilfoil was removed from this area by suction harvesting in 1990, and hand harvested in 1991. In both 1992 and 93 an area of moderately dense milfoil was observed at this site. In 1995, a bed of milfoil and larger area of moderate density growth was observed in this bay. This condition persisted in 1997.

Moonlight Bay, Harbor Island (M-61). An area of dense Eurasian watermilfoil growth remains at this site, along with an extensive area of scattered low-density plants. The dense area is near a beaver lodge in the southern end of this small bay. Numerous small milfoil plants were observed growing in the edges of the beaver lodge, making management of this population difficult. Sediments in the bay consisted of clay and the bottom slope was moderate. Milfoil was managed in this area by suction harvesting in 1990 and hand harvesting in 1991. This location is proposed for treatment with the herbicide Sonar™ in 1998.

Marine Village (M-62). A small number of scattered Eurasian watermilfoil plants were found among the docks at this site. Bottom sediments were sandy and slope was gradual. The plants were removed by hand harvesting in 1990, 1991, 1993, and 1995 – 1997.

South of Agnes Island (M-63). In 1989, approximately 25 Eurasian watermilfoil plants were found near submerged dock cribs at this northern basin tributary site. Surrounding sediments are sand and clay; however, silt has accumulated between the dock cribs. Hand harvesting has occurred here every year since 1990. One Eurasian watermilfoil plant was removed from this location by hand harvesting in 1993. No milfoil plants were observed in 1995 and one plant was removed in 1996. The site was cleared with the removal of 24 plants in 1997.

Three Brothers Island (M-64). Few scattered plants of Eurasian watermilfoil were found along the western side of these islands within a small area of lily pads. Sediments are sandy to boulders with a moderate slope. All plants were hand-harvested in 1993, 1995 - 1997.

West of Three Brothers Island (M-65). Approximately 5 plants of Eurasian watermilfoil were found at the docking facility for Three Brothers Island in 1989. No milfoil has been found at this site since 1989.

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North Sawmill Bay (M-66). A large area of moderate-density Eurasian watermilfoil plants were found clumped along the western speed and hazard buoys at the north end of Sawmill Bay. Depth of this population was 4-5 meters. Eurasian watermilfoil populations now rim the entire Sawmill Bay area. A portion of the milfoil at this site was covered with benthic barrier in 1990. The barrier positioned in 1990 remains in place at this time. Milfoil now surrounds the barrier at this site. This location is within Sawmill Bay, a site proposed for treatment with the herbicide Sonar™ in 1998.

Bluff Head Creek T-8 (M-67). Two Eurasian watermilfoil plants were found in 1990 at this northern basin tributary site. Surrounding sediments are sand and clay however silt has accumulated between the dock cribs. Both Eurasian watermilfoil plants were removed from this location for voucher specimens in 1990. A single milfoil plant was removed during the 1993 site revisit and two plants were removed in 1995. In 1996, 18 milfoil plants were removed. One milfoil plant was removed in 1997.

Rock Dunder Island T-10A (M-68). Eight scattered plants and a number of fragments of Eurasian watermilfoil were found on the north side of the tributary in 1993. Sediments are sand and clay with a moderate slope. No Eurasian watermilfoil plants were found in 1995. In 1996, 9 milfoil plants were found and removed. In 1997, 37 plants were found scattered along the base of the drop-off on the western side of the island.

Kitchal Bay T-11S (M-69). Four Eurasian watermilfoil plants were found and removed during the 1991 survey. All plants were found between two covered boathouses on the east end of the bay. The slope is gradual to moderate and the sediment consists of a mixture of clay and sand at this site. Milfoil had not been recorded at this site until one plant was found and removed in 1997.

West Halfway Island T-71 (M-70). A single Eurasian watermilfoil plant was found and removed as a voucher specimen during the 1990 Tributary Survey. The following year four more plants were removed. No plants were found between 1991 and 1996. In 1997, one plant was harvested.

Hague Brook T-86 (M-71). Two Eurasian watermilfoil plants were found and removed as voucher specimens in 1990. Later in the 1990 season, a number of Eurasian watermilfoil plants were observed at the outer edge of the delta near the pin buoys. This site was upgraded to a bed in 1991. A large dense bed of Eurasian watermilfoil now extends along the outer edge of the delta in water depth of from 2 to 5 meters. Sediments at this site are sandy on the delta grading to silt at the edges of the delta. The slope on the delta is gradual with a relatively sharp drop-off at the edge.

South Cooks Bay T-89 (M-72). A single Eurasian watermilfoil plant was found in 1990 and 1991, both were removed as voucher specimens. An additional four plants were removed during the 1993 Tributary Survey. In 1995, 27 milfoil plants were removed. A single milfoil plant was removed in 1996. In 1997, a total of nine plants were harvested. This site is located at the south edge of the bathing beach at Rogers Rock State Park,

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adjacent to the mouth of a small tributary. Slope at this site is gradual with sediments of sand and silt.

Tributary in Dark Bay T-91A (M-73). Nine scattered Eurasian watermilfoil plants were hand harvested adjacent to a white boathouse north of the tributary in this bay during the 1993 survey. In 1995, 53 milfoil plants were found and harvested from this site. In 1996, an additional 21 milfoil plants were removed. By 1997, only five plants were found and removed from this site. Sediments are sand and rock with steep slopes.

North Meadow Point (M-74). Four Eurasian watermilfoil plants were found and removed as voucher specimens after receiving a letter in 1990 from a resident describing the location. Seven plants were removed during the 1993 survey. The slope is gradual near shore and moderate beyond a depth of 4 meters. Sediments are silt and sand. No plants were observed at this site in 1995. In 1996, 91 milfoil plants were found behind an existing boathouse in a marshy area, and removed. Fifteen plants were removed from behind the boathouse in 1997.

Bell Point (M-75). An area of moderate density milfoil was located within the dock area at Bell Point following a description of the area by a local resident. The slope in this area is steep with soft sediments at the south edge of the docks and bedrock at the north. Numerous obstructions are present on the bottom in this area. Hand harvesting removed 144 plants at this site in 1995, with an additional 385 milfoil plants removed in 1996. Extensive management was done on this site in 1997. A total of 655 plants were hand harvested from inside the dock area before suction harvesting was attempted later in the season. Unfortunately the site could not be cleared due to a malfunction with the harvesting equipment, and approximately 1/3 of the milfoil population was removed. Suction harvesting is recommended to complete the job in 1998.

South Shelving Rock Point (M-76). An area of scattered Eurasian watermilfoil plants adjacent to a dock on the south side of the point was hand harvested in 1993. In 1996, the density in this area had increased to moderate. The slope of the bottom in this area is gradual and the sediment is sandy. A small section of benthic barrier may be appropriate for this location. This site was originally designated for suction harvesting in 1997, but due to equipment failure, a "raking" technique was applied. This technique was effective to some degree, and resulted in the removal of approximately 1/4 of the existing milfoil population.

Walker Point (M-77). An area of scattered milfoil plants was found north of the point and stretched to the boathouses of the Loines estate. The slope in this area was steep; the sediments were soft silt and cobble. All plants were found 1 to 4 meters in depth and were removed during 1993. No milfoil has been found at this site since.

Bay North of West Tongue Mountain (M-78). This site is approximately 0.5 km north of the West Tongue Mountain site. The milfoil was found growing among a pair of fallen trees just off shore. The slope at this site is moderately steep, and the sediments consisted

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of sand, gravel, and silt. Fewer than 10 plants were removed from this area in 1992 and 1993 and 1995. Eighteen milfoil plants were removed in 1996. In 1997, a moderately dense grouping of 405 milfoil plants were found and removed via hand harvesting on the southern side of the bay, on the edge of a very steep drop off, down to about 5 meters.

Shore South of Bear Point (M-79). The site is approximately 0.5 km south of Bear Point. This site had 2 milfoil plants at the base of a fallen tree in 1993. The slope was very steep, and the plants were located on a small shelf in soft silt. No milfoil was found in 1995. In 1996, five milfoil plants were harvested, and three in 1997.

Bay South of Bear Point (M-80). An area of widely scattered milfoil plants was found in this bay. The site was cleared of 15 plants at 1 to 3 meters in depth in 1993. In 1995, one milfoil plant was found with an addition two milfoil plants removed in 1996 and 1997. The slope was gradual; the sediment was a mixture of wood chips and silt.

Butternut Brook T-21 (M-81). This site was located south of Point Comfort at the mouth of Butternut Brook. A single milfoil plant was found and removed in 1991, from the culvert in the end of the bay. The slope of the bay is very gradual, the sediment is sand and soft silt. No additional milfoil has been found since 1991.

Barber Bay T-22 (M-82). Scattered milfoil plants were found in the center of the bay during the 1991 tributary survey. The majority of the plants were removed from 2-5 meters of water. The slope was gradual, and the sediments consisted of sand and silt. In 1995, all milfoil plants observed (204) were removed by hand harvesting. In 1996, 168 milfoil plants were harvested. Fourteen plants were cleared from amongst the logs in the central portion of the bay in 1997.

Van Warmer Bay T-25a (M-83). This site had a single milfoil plant found along a dock just south of a hazard buoy in front of the Brodeur camp on the east shore. One milfoil plant was removed from this site in 1991, 1992 and 1993. The slope is gradual, and the bottom sediment is sand. No milfoil was observed in 1995, 1996 or 1997.

Harris Bay Inlet T-30a (M-84). In 1991 milfoil was found in an area stretching from the tributary culvert to the boat docks in less than one half meter of water. Approximately 50 milfoil plants were observed. A number of milfoil plants were removed as voucher specimens. This area was exposed (dry) during 1993. No milfoil was observed in 1995 or 1996. A total of 29 plants were found and removed in 1997. The sediment in this area is very soft silt, and the slope at this site is flat.

Dunham Bay Inlet T-32 (M-85). Three milfoil plants were found scattered between the bridge and a boat dock to the east in approximately 2 meters of water during the 1991 survey. There were also a large number of milfoil fragments found covering the bottom in the south end of the bay. Since that time, this site has only been surveyed due to large milfoil populations throughout the bay. In 1996, no milfoil was observed in this area, but

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18 plants were removed in 1997. The slope at this site is gradual, the sediment is a combination of sand, soft silt and cobble.

East Shore T-36d (M-86). Two milfoil plants were found at this site during the 1991 tributary survey. No milfoil plants have been found at this site since. The site has a sheer rock wall to the north, and a storm culvert between two docks. The slope at this site which is adjacent to the Crosbyside area, is steep, the sediment is sand, light silt, and rock.

Crosbyside T-37b (M-87). This site is approximately 100m north of T-37a. It is adjacent to a culvert in a wooden seawall. A total of 4 milfoil plants were taken for voucher specimens in 1991. No milfoil was found in 1995, however 2 milfoil plants were harvested in 1996. There were no plants found here in 1997. The slope is gradual, and the sediment is sand and rock.

Crosbyside T-37c (M-88). Six milfoil plants were removed in 1991 for voucher specimens at this site, which is at the mouth of a seasonal tributary. No milfoil plants were found at this site in 1993. In 1995, two milfoil plants were removed. No milfoil was observed in 1996 or 1997. The tributary runs to a double slip dock approximately 50m south of T-37d. The slope is moderately steep, the sediment is a combination of silt, sand, and rock.

Crosbyside T-37d (M-89). A pair of milfoil plants were found in 1991 and removed from this site directly in front of a private beach with drainage culverts on each side. This site is approximately 50m north of T-37c, the slope is moderately steep, and the sediment is a combination of sand, silt, and cobble. No milfoil was found in 1995, 1996, or 1997.

South Tea Island Culvert T-41a (M-90). This site is located to the southwest of Tea Island adjacent to the Lake George water treatment plant. A large culvert drain under a dock and into the lake at this location. Milfoil was first found in 1991 in the outwash area of a culvert. A total of 7 milfoil plants were removed from this site in 1993. Eleven milfoil plants were removed in 1995 and an additional 7 in 1996. One plant was harvested in 1997. The slope at this site was moderate, the bottom sediment consisted of sand and rock.

Harris Bay-East Side (M-91). Milfoil was located in 1991 in the outwash area of a culvert, on the northeast shore of the bay. An area of scattered to dense growth of milfoil runs from the marina south along the east shore. The slope is gradual, and the sediment a mixture of sand, silt, and cobble. Milfoil plants were too numerous to count in 1993, 1995 and 1996. This site has received no management activity.

Bay East of Hens and Chickens (M-92). The site is on the east shore at Shelving Rock Point. The slope is moderate near shore to a depth of 3 meters, the bottom is rocky in shallow waters (less than 2 meters) and changes to sand and silt with logs and debris covering the bottom in deeper waters. The shoreline slopes steeply to the lake edge and a

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pump house and water intake are found at this location. Milfoil was first found at this location in 1992, when 1 plant was removed. Seven milfoil plants were removed in 1993. No milfoil plants were observed in 1995 or 1996. Hand harvesting of this site in 1997 removed 61 milfoil plants.

East of Refuge Island (M-93). A single milfoil plant was found and removed from a small cove on the east shore across from Refuge Island in 1992. No milfoil was found at this site in 1993, 1995 or 1996. Eighteen plants were removed from this site in 1997. The sediments in this area are sand and cobble from 0 to 2 meters, and sandy silt and detritus from 2 to 4 meters. The slope was flat to 2m depth, then moderate.

Northwest of 3 Sirens Islands (M-94). The site is on the eastern side of Longue Mountain in a small cut along the shoreline. The slope is steep and rocky with small pockets of silt sediments. A single milfoil plant was found in 1992 and removed, none have been found since.

N.W.B. Head of Bay (M-95). Two plants were harvested from this site in 1992 and a single milfoil plant in 1993. The site is located at the extreme north end of the bay, between two boathouses in approximately 2m of water. The slope is gradual to moderate with sand and silt inshore and soft silt after a depth of 4m. No milfoil plants were found in 1995, 1996 or 1997.

Harris Bay/mid-bay (M-96). The small milfoil bed at this site, which was first observed in 1992, is located south of the 5 mile per hour buoy line and north of a small rock outcropping in the middle of Harris Bay. The slope is flat and the bottom is rocky with large areas covered by bedrock, the plants are growing in large pockets of silt on top of the bedrock. No management has occurred at this site.

West Side Clay Island (M-97). The milfoil at this site was located in 1992, in a sunken coal barge in 3 meters of water. A fine silt sediment was inside the barge along with the majority of the milfoil plants, very few plants were found outside of the barge where the sediments was a mixture of sand and silt. All milfoil observed was hand harvested in 1993, 1995 - 1997.

South Jenkins Brook (M-98). First observed in 1993, the site is just south of a small tributary (Jenkins Brook) on the north side of Jenkins Point, Hague. Approximately 30-50 plants were discovered under a white mooring float. In 1995, a small area of dense growth around a water intake was observed. This condition persisted in 1996. In 1997, a small bed approximately 100 ft in length was observed, encompassing the original site around the mooring. Benthic barrier was installed at this site in 1997. The slope at this site is moderate, with a bottom sediment of sand and light silt.

Holman Hill Creek (M-99). A scattered area of milfoil (50-100 plants) was first located during the 1993 tributary survey. The site is in front of the boathouse on the north side of Holman Hill Creek. In 1995, 125 plants were removed from this site. In 1996, 54 milfoil

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plants were removed, and 81 in 1997. The slope is moderate for the first 20m and the bottom is a sand delta from the stream. Twenty meters from shore there is a steep drop off.

Temple Island T87 (M-100). Two milfoil plants were found at this location in 1993 and removed. The plants were found 100m from the west shore and 100m south of the culvert across from the Island. The slope is flat to gradual, the bottom sediments are sand and light silt. No milfoil was found in 1995 or 1996, and one plant was harvested in 1997.

Brook North of Green Point (M-101). A single milfoil plant was found in 1993 and 1995 on the delta of this stream in about 1 meter of water. Close to shore the bottom was rocky with numerous logs. Sand and silt dominated the sediments beyond 1 meter depth. The slope is moderate to steep. No milfoil was found in 1996 or 1997.

South Tributary at 5 Mile Mountain (M-102). The site is in a small cut in the shoreline along the eastern side of the Tongue Mountain range, the slope is moderate and the sediment consisted mainly of shallow silt in rock depressions. Eight plants were removed during 1993 and twelve in 1995. No milfoil was found in 1996 or 1997.

North of North Meadow Point (M-103). Five milfoil plants were hand-harvested from this site in approximately 3m of water in 1993. The site is on the north side of the point east of a large rock on the shore, a small green shed is on shore even with the location of the site. No milfoil was found at this site in 1995 and a single plant was removed in 1996. None were found in 1997.

Assembly Point/West Bay (M-104). A small area of moderate density growth of milfoil plants was found in 1993. This site is 100 meters south of the wetland outlet on the western side of Assembly Point. Milfoil plants were found near a sailboat mooring. In 1995, 27 milfoil plants were removed from this location. There was no presence of Eurasian watermilfoil in 1997. Slope was moderate and sediments were sand and silt.

Assembly Point/Northwest (M-105). A single milfoil plant was found and removed, approximately a quarter mile southwest of the tip of Assembly Point, in front of a white boathouse. The plant was in water 3m deep in a sand/silt sediment mixture, and the slope was gradual to moderate. No milfoil was found at this site in 1995-1997.

Assembly Point/Southeast Bay (M-106). The site was in the bay on the southeast side of Assembly Point. Three plants were found in the mouth of the bay in 1 to 2 meters of water in 1993. The sediments consisted of sand and silt, the slope in this area was flat to gradual. No milfoil was found at this site in 1995, 1996 or 1997.

Elizabeth Island (M-107). The site is located on the delta of a small tributary to the east of Elizabeth Island. Bottom slope is gradual and sediments are mainly sand with sand

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and silt mixed at the deeper margins. A single milfoil plant was found at this site in 1994. No milfoil was found at this site in 1995, 1996 or 1997.

Harris Bay Culvert (M-108). This site is immediately adjacent to site M-91 and should probably be combined. The culvert is found at the Lake George Boat Company. Moderate density growth of milfoil is found at the mouth of the culvert and extending into the docks of the marina complex.

SW Happy Family Islands (M-109). Scattered patches of milfoil were observed adjacent to a covered boathouse (Cedar Rock Lodge). In 1995, 27 milfoil plants were observed and removed by hand harvesting. In 1996, moderate density patches of milfoil were found to the north of the original site and hand harvested. The population was reduced with the removal of 346 plants in 1997. The bottom slope is gradual and the sediments composed of sand and cobblestones with scattered rock outcrops.

Diamond Point (M-110). Sparsely scattered milfoil plants were found in a small embayment just north of Diamond Point in 1994 at depths of 2 to 3 meters. Bottom slope at this site is gradual and sediments are sand and silt. No milfoil was found at this site in 1995, 1996 or 1997.

NWB-NE Walker Point (M-111). In 1995, scattered milfoil plants were first found around an "L" shaped dock and boat launch approximately 500m north of Walker Point. The milfoil plants (106) were removed by hand harvesting. In 1996, 6 milfoil plants were removed, and none were located in 1997. Slope is moderate and sediments are mainly silt with some sand.

Whale Rock, East of Agnes Island (M-112). In 1996, a moderate density area of milfoil growth was observed in pockets of silt on the eastern side of Whale rock. Slope is steep and sediments are mainly silt on this bedrock outcrop.

Diamond Island (M-113). In 1996, several small dense patches of milfoil plants were observed on the western side of Diamond Island. The milfoil plants (112) were removed by hand harvesting. A total of 248 plants were hand harvested in 1997. This site is recommended for suction harvesting. Slope is moderate to steep and sediments are mainly silt between boulders.

Sandy Bay - Mooring Post (M-114). In 1996, scattered and moderate density milfoil plants were first found within a marina on the southwest side of Sandy Bay. No management was performed here in 1997. This site is recommended for suction harvesting. Slope is moderate and sediment is mainly silt with some sand.

Cape Cod Village Bay (M-115). In 1996, a single milfoil plant was found around a series of finger docks at the Cape Cod Village Resort. A return visit in 1997 did not indicate the presence of Eurasian watermilfoil. Slope is moderate and sediment is mainly sand.

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Holman Hill Creek - North (M-116). An area of scattered milfoil plants was first found in 1996. The milfoil plants (54) were removed by hand harvesting. In 1997, 92 plants were removed. The main presence of the plants was concentrated at the edge of the delta, as well as some scattered plants in and around a boathouse at the mouth of the creek. Slope is moderate and sediment is mainly a silt composition with some sand.

Glenburnie - Blairs Bay (M-117). A small area of moderate density growth of milfoil was observed under a swim float near the steamboat landing in Blairs Bay. Slope is moderate and sediments are mainly sand. No management was conducted in 1996 or in 1997.

Blairs Bay, North (M-118). Scattered milfoil plants were observed within a dock area to the south of the Association beach. Slope is gradual and sediments are a sand/clay mixture with some silt and detritus material. No management was conducted in 1996. Twenty plants were hand-harvested within a dock crib and boathouse in 1997.

East Side HBYC (M-119). Eurasian watermilfoil plants were observed scattered off the northeast corner of the marina in 1997. Four plants were harvested. Slope is gradual and sediments are composed of soft silt over a sandy bottom with a mixture of wood chips and other detritus material.

North Warner Bay – Culvert T-28 (M-120). Eurasian watermilfoil was first observed off the entrance to the tributary in 1997. One plant was harvested about three meters deep. The bottom is sandy, with a gradual slope out to three or four meters. There is a minimal population of native plants here.

Bay South of Paulist Fathers T-36E (M-121). Eurasian watermilfoil was first observed in rocks at the edge of old crib docks in 1997. Four plants were harvested here in 1997. Sediments are of a soft sand/silt composition.

Still Bay T-49 (M-122). Eurasian watermilfoil was first found here in 1997 at the mouth of the tributary. Six plants were harvested, scattered between the docks as well as out in water approximately three meters deep. Sediments are composed primarily of firm sand and bottom slope is gradual.

West Flirtation Island (M-123). A small bed of Eurasian watermilfoil was found here in 1997, about 75 yards off of the docks of the Northern Lake George Yacht Club about three or four meters deep. It will require some intensive management, such as a small section of benthic barrier. No management was conducted here in 1997.

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Aquatic Plant Management

In the Integrated Aquatic Plant Management Program developed for Lake George, physical plant management techniques form the basis for management activities. Preferred physical management approaches are based on density of milfoil growth. Scattered plant sites are managed by hand harvesting, moderate density growth is addressed by a combination of suction and hand harvesting and dense bed growth is generally managed with benthic barrier and maintained with suction and hand harvesting. A pilot program to evaluate the use of the herbicide Sonar™ for “spot treatment” of small areas of dense growth of Eurasian watermilfoil is also proposed for 1998.

A five year permit for aquatic plant management in Lake George was issued by the Adirondack Park Agency in 1992 and transferred from NYS DEC to the LGPC in 1994. This permit was renewed in 1997, and allows physical controls to be applied to manage the growth and spread of Eurasian watermilfoil through the spring of 2002.

Table 2. The number of known milfoil locations and their status from 1985 through 1997.

Year	Total # of Milfoil Sites	Density of Milfoil Growth			Status	
		Bed	Moderate	Scattered	New ¹	Cleared ²
1985	3	3	0	0	3	0
1986	22	9	0	13	19	0
1987	43	8	0	29	21	6
1988	55	8	0	35	12	12
1989	66	12	6	23	11	25
1990	76	13	8	19	10	36
1991	91	11	7	27	15	46
1992	97	16	4	40	6	37
1993	106	21	13	10	9	62
1995	111	26	13	5	1	67
1996	118	25	11	9	7	73
1997	123	28	11	13	5	72

¹ First year in which Eurasian watermilfoil was observed at a particular site.

² Indicates all visible Eurasian watermilfoil removed by management activities.

A total of 111 sites have been managed for Eurasian watermilfoil in one or more years since the start of aquatic plant management efforts. Of these, 53 were cleared of Eurasian watermilfoil in 1997. Cleared, as used in this context, indicates removal of all visible milfoil plants, including roots. An additional 27 sites were found clear of Eurasian watermilfoil. At 5 sites, milfoil abundance was reduced, but density of milfoil growth precluded complete removal at these sites. Thirty-nine sites require a more intensive management strategy than hand harvesting (e.g. suction harvesting, benthic barrier or

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herbicides). Of these, twelve sites currently have populations of Eurasian watermilfoil toward which no management activity has been directed.

Hand Harvesting

In 1997, a total of 5938 Eurasian watermilfoil plants were removed by hand harvesting at 53 locations. On average, 112 plants were removed from sites with milfoil present at hand harvestable levels. This compares with the 1996 program where 3973 milfoil plants were removed from 45 sites with an average of 88 plants removed per site. Coupled with the sites cleared of milfoil in past harvesting efforts, 80 sites or 65% of the recorded milfoil sites were free of milfoil at the conclusion of the 1997 effort (Figure 3).

Survey and hand harvesting required a total of 286 person•hours at sites where hand harvesting was appropriate (80 sites). This total includes time spent at sites where no milfoil was found. Effort was divided between travel, equipment setup, areal surveys, and harvesting. The relative percent of effort allocated to each of these tasks is presented in Figure 2. A total of 202 person•hours were spent at the 53 sites where hand harvesting was necessary to remove Eurasian watermilfoil, for an average of 3.8 person•hours per site. This compares to 1996 where 45 hand harvestable sites required a total of 167 person•hours for an average of 3.7 person•hours.

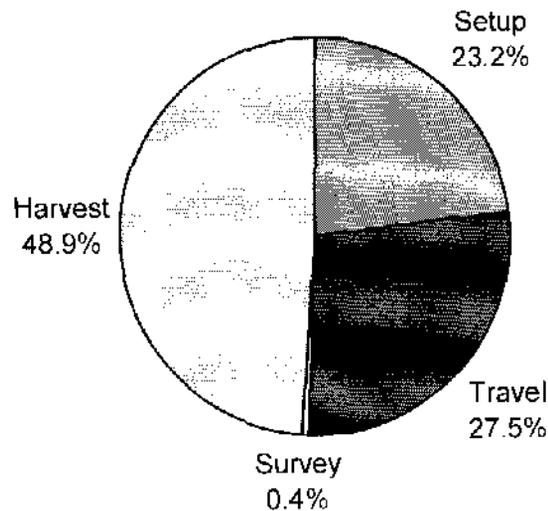
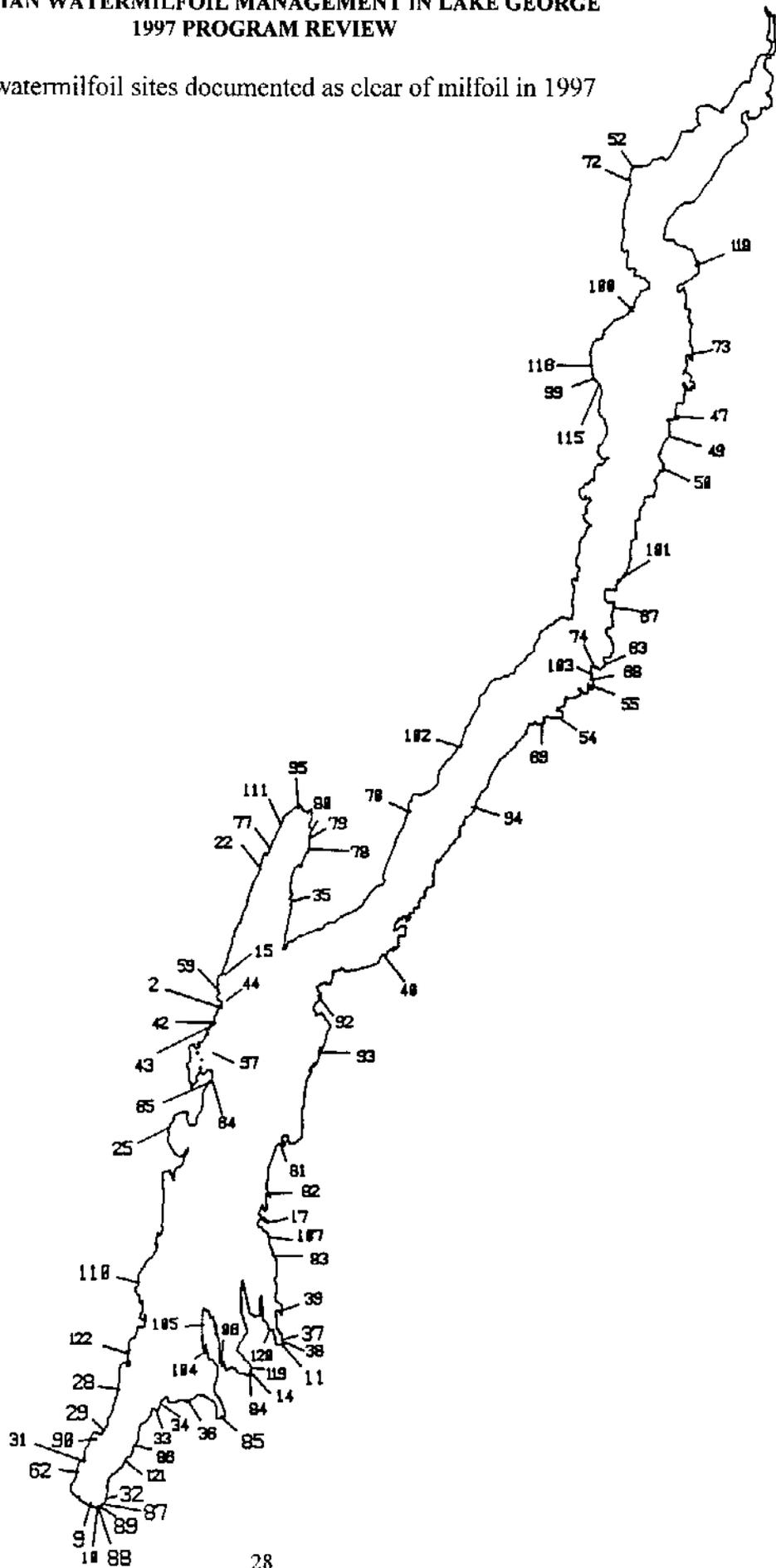


Figure 2. Distribution of effort for the hand harvesting program.

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Figure 3. Eurasian watermilfoil sites documented as clear of milfoil in 1997



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Benthic Barrier

Sites managed with benthic barrier during past programs were inspected and maintenance was performed where necessary. Maintenance activities centered on releasing gas trapped beneath the barrier material and readjusting stakes and weight bars. Milfoil fragments present on the surface of the barrier were also removed. There are a total of 9 locations where benthic barrier remains in place in Lake George. These include the following:

Dunhams Bay	West Brook	South Jenkins Brook
Shriffs Dock	Shepards Park	North Sawmill Bay
East Brook	Sunset Bay	South Sawmill Bay

Benthic barrier maintenance was conducted at 5 locations (East Brook, Sunset Bay, Shepards Park, West Brook, and South Sawmill Bay). The barrier at each of these sites was inspected by divers and repairs and adjustments made as necessary. Repairs included moving barrier to close gaps between panels, cutting vent holes in the barrier material to release trapped gases, and placing additional stakes in the barrier material to secure it to the lake bottom.

At two locations, Congers Point and Harris Bay, all of the existing benthic barrier (21 panels of Aqua-Screen) was removed. These sites represent locations where adjacent milfoil populations have been reduced to maintenance levels, reducing the probability of re-introduction. The benthic barrier at these sites was installed in 1990, and on removal in 1997 remained in adequate condition to be reused. The Aqua Screen is beginning to show wear and probably can not be used again. One panel of Palco-Pond Liner was also removed from South Sawmill Bay. This site is proposed for herbicide (SONAR™) treatment in 1998. The Palco-Pond Liner was in excellent condition and should be reusable for a number of years. The lake bottom was devoid of aquatic plants in areas where the barrier had been. All of the barrier material was cleaned of sediment and attached plants prior to installation at South Jenkins Brook (M-98). Areas where barrier was removed should be inspected annually to protect against re-infestation by Eurasian watermilfoil.

Barrier installation occurred at one location (South Jenkins Brook, M-98). A total of 22 panels (7,700 ft²) of benthic barrier were installed. Benthic barrier relocation required a total of 109 person•hours. Hand harvesting was also conducted at the benthic barrier site to complete management efforts. Additional hand harvesting and barrier maintenance will be required in 1998 to assure the effectiveness of this management effort.

Suction Harvesting

The suction harvester was used for one location, Bell Point (M-75). The site was partially cleared of milfoil via a combination of hand and suction harvesting. Management at this site was not completed due to equipment failure with the suction harvester. Survey and suction harvesting required a total of 39 person•hours. These efforts were divided

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between travel, equipment setup, areal surveys, and harvesting. Initial setup of the suction harvester including travel to retrieve all components, repair and replacement activities required an additional 19 person•hours. The majority of these latter efforts should not be required on an annual basis.

The suction harvesting system is mounted on two pontoon boats. The larger of the two vessels supports a diesel engine, which powers the water pump system and an air compressor providing air for the divers. The smaller vessel supports the capture basket, where the outlet lines from the suction harvesting system delivers the plants and sediments harvested by the divers. In the capture basket, sediments collected with the harvested milfoil are washed away and allowed to settle back to the lake bottom. In 1997, the small pontoon boat supporting the collection basket developed a leak in one of its pontoons. The leak was due to an impact on the aging pontoon, rupturing a seam. The age and condition of this vessel coupled with the fact that it is undersized for the intended use indicate that this pontoon boat be replaced before the suction harvesting system can be used.

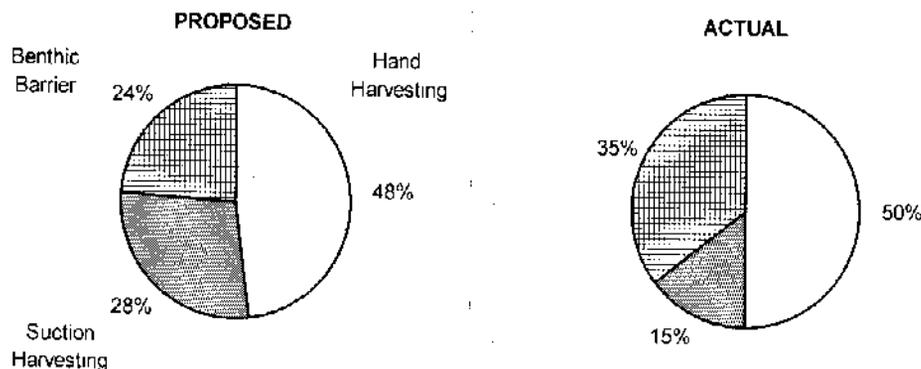
A number of sites remain with milfoil populations of densities suitable for suction harvesting either as a primary management tool or in conjunction with other management practices. These include:

- | | |
|------------------|-------------------|
| Silver Bay | Sandy Bay |
| NW Cooper Point | Shepards Park |
| Diamond Island | NW Sweetbriar Bay |
| S. Shelving Rock | Bell Point |

Effort

Financial support from the Fund for Lake George to the LGPC expanded the 1997 effort over prior years. In the 1997 Lake George Aquatic Plant Management Program, the three

Figure 4. Differences in proposed versus actual effort for the 1997 Lake George Aquatic Plant Management Program.



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major components were hand harvesting of scattered milfoil populations, suction harvesting of moderate density populations and benthic barrier installation over dense beds of milfoil. A breakdown of the relative effort expended for each of these tasks is provided as Figure 4. Hand harvesting was proposed to require approximately one-half of the total effort, with the remaining half divided approximately evenly between suction harvesting and benthic barrier installation. Failure of the suction harvesting system prior to completion of 1997 proposed activities required re-allocation of effort. An additional ten percent effort was diverted from suction harvesting to benthic barrier installation, resulting in the placement of an additional 700 ft² of benthic barrier. Additional effort was contributed to hand harvesting (2%) to address 12 of the 17 milfoil sites discovered since the original proposal was written in 1994. The other 5 sites require more intensive management strategies than hand harvesting.

Summary

Hand harvesting new scattered plant sites as they are found, especially if they contain only a few plants appears to be an effective management strategy. At 21 sites where fewer than one hundred milfoil plants were found and cleared by hand harvesting, milfoil was absent for at least two years after removal. Of these 21 sites, 12 have not had milfoil since the initial survey and removal. Only very limited numbers of milfoil plants have been found at the other nine sites. At present, 27 sites that produced milfoil in a least one previous survey were found to be free of milfoil in 1997.

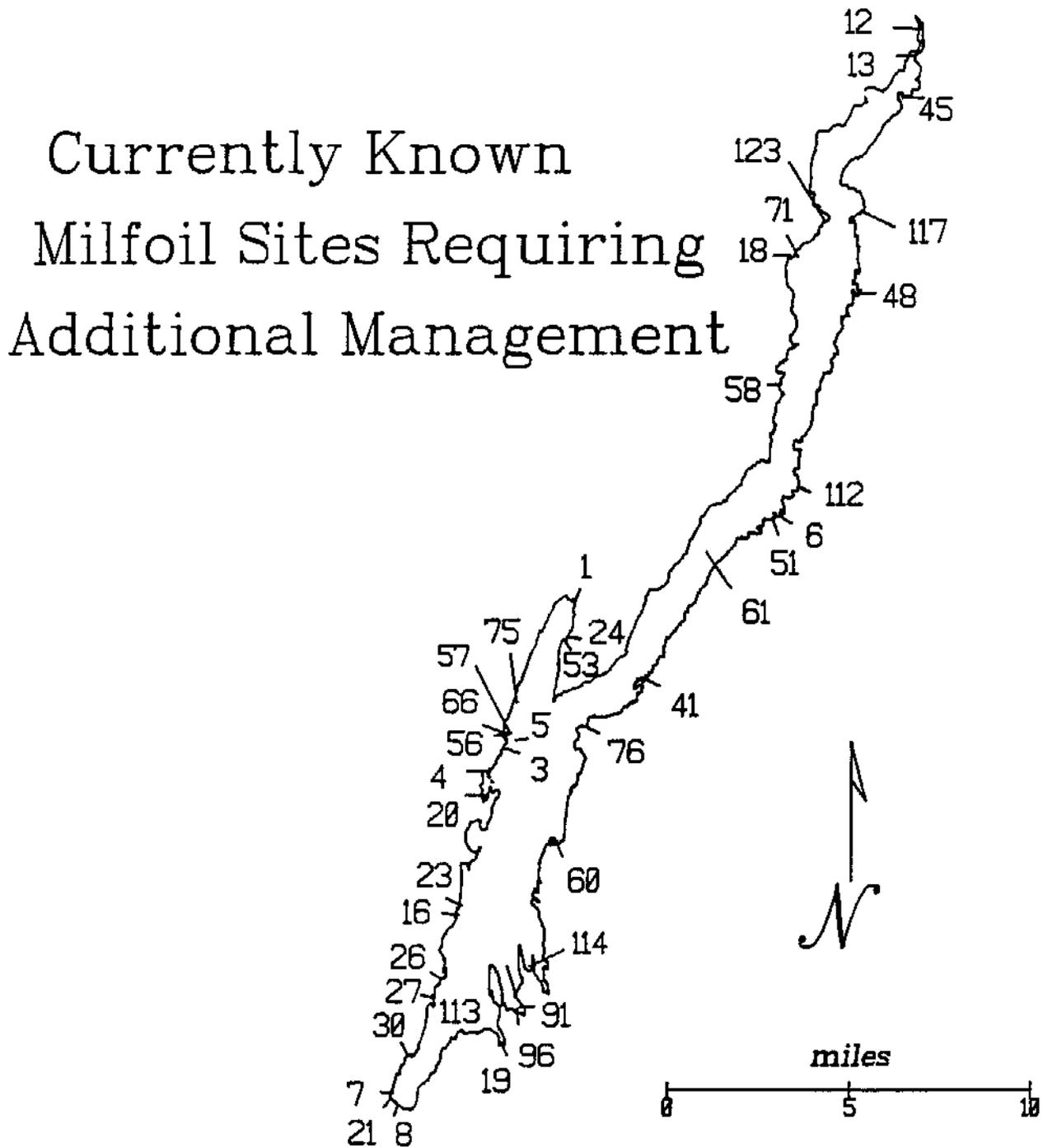
Results of hand harvesting areas with elevated numbers of milfoil plants present (Eichler et al., 1991) indicate that while this technique may not eliminate milfoil populations in a single season of harvesting, a substantial reduction in the number of plants present and management effort necessary to maintain these locations can be achieved.

Evaluation of the effectiveness of benthic barrier (Eichler et al., 1995) and suction harvesting (Eichler et al., 1993) suggested that these techniques can also be valuable tools for aquatic plant management. Sites managed by these techniques are referred to as "managed" rather than "cleared", since removal of all visible milfoil plants by these techniques is not practical or cost effective. Used in conjunction with each other and hand harvesting, these efforts can yield cleared areas. Active maintenance of suction harvest and benthic barrier sites on an annual basis is necessary to prevent regrowth and recolonization of milfoil in these areas. This is particularly important if other active milfoil sites are in close proximity to managed areas or if sites are not cleared of milfoil before benthic barrier removal.

Fifteen of the 28 bed sites (Figure 5) have been greatly reduced with the use of benthic barrier. However, ten of the fifteen remain on the active list of milfoil sites pending further evaluation, management and maintenance. Five sites previously managed with benthic barrier are now maintained with hand harvesting. A serious concern is the

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Figure 5. Eurasian watermilfoil sites requiring future management efforts.



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availability of annual funding for maintenance. Future management and maintenance is uncertain and the loss of even a single season of management can negate previous efforts. Examples of this are two sites, Sheriff's Dock (M-21) and Dunhams Bay (M-19), which were managed with benthic barrier by the Lake George Park Commission in 1986. These sites have not been maintained since that time and both require extensive additional management activities.

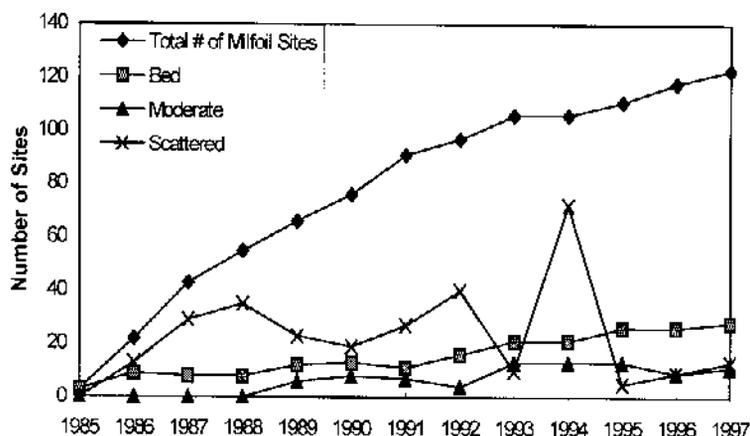


Figure 6. Eurasian watermilfoil sites and their status from 1985 through 1997.

Figure 6 shows the relationship of scattered plant sites to bed sites in the past thirteen years. The rise in the number of beds is caused not only by finding new densely populated areas, but also by the growth of moderately dense patches into the status of beds. Without management activities, the number of sites classified as beds would be much greater. Even with current management levels, the number of bed sites has continued to increase, suggesting the need for even greater efforts.

A pilot program to evaluate the herbicide Sonar™ at four locations is proposed for 1998. The use of this herbicide for milfoil control in Lake George is somewhat atypical. In Lake George, the majority of dense milfoil growth is present as small beds, generally less than 2 acres in size. Typical Sonar™ applications include whole lake treatments at low dosages or “spot treatments” of dense growth zones at least 5 acres in area. In the Lake George pilot project, treatment of smaller dense growth areas or sequestering small bays with booms to reduce water movement, will be experimentally evaluated. The results of this program may provide an additional tool for use in an Integrated Aquatic Plant Management Program for Lake George.

The sharp decline in the number of active scattered plant sites is a result of management efforts, mainly hand harvesting these scattered populations. Substantial effort was made to reach all known milfoil sites in 1997.

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