

Authorization Form

*Our signature below authorizes Aqua-Weed Control, Inc.
to file for our aquatic nuisance control permit.*

It is the intention of the riparian owner/s of White Lake, Oakland County to treat for nuisance aquatic vegetation and/or algae as permitted by the Michigan Department of Environmental Quality (MDEQ). We authorize Aqua-Weed Control Inc. to file all the necessary documents to secure a permit from the MDEQ and to amend the permit as may be required. We also authorize that required notices may be sent via electronic media to address given below.

- As is required by Michigan Law the person signing below must have the proper authority from the riparians or other organization (homeowners association, lake board, condo association, management company, owners representative, etc.) to properly authorize Aqua-Weed Control, Inc. to file for your permit.
- As required by Michigan Law, the person signing below must secured proper permission from the riparian owners in the proposed treatment area and those riparians within 100 feet of the proposed treatment area. These permissions must be maintained year to year and must be made available to the MDEQ upon request. Individual permission are not usually required in the case of Lake Boards, Special Assessment Districts, Condo Associations, Apartment Complex Ponds and certain deed binding associations where riparian rights have been "deeded" to the homeowners association.
- As is required by Michigan Law the person signing below must distribute a copy of the "lake treatment notice" to each lake front riparian within the proposed treatment area plus 100' no later than 7 days before our first treatment and no sooner than 45 days (MDEQ rule). A copy of the "lake treatment notice" is enclosed. The signature below acknowledges receipt of the notice.

The customer signing below acknowledges and agrees to fully perform all tasks and undertakings listed above. Failure to do so may result in sanctions by the MDEQ against the lake association, its aquatic nuisance control permit, and/or Aqua-Weed Control. This authorization form is intended to allow Aqua-Weed Control, Inc. to file for your aquatic weed control permit early so that the MDEQ has ample time to process your required permit application. Homeowner and/or lake group officials can withdraw this authorization at any time.

Name of the association or group: White Lake Citizens League WLCL
 Signed by: Donald E. Day Title: Weed Control Mgr. Date: Dec 6th 2015
 Please print name: DONALD E DAY
 Address: 3580 Reserve Court
 City and Zip: Highland, Mi. 48356 Phone: 248-417-7910 ^{Don} 248-939-1408 ^{Patti}
 E-Mail Address dday7052@yahoo.com @ patteday@yahoo.com



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AQUATIC NUISANCE CONTROL AND REMEDIAL ACTION UNIT

LAKE MANAGEMENT PLAN

Pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and Part 33, Aquatic Nuisance Control, of the NREPA, and the administrative rules promulgated thereunder, a lake management plan is required as part of the application for a whole-lake chemical treatment to the waters described below for the control of nuisance aquatic vegetation.

WATERBODY NAME	COUNTY(IES)	TOWN(S)	RANGE(S)	SECTION(S)
White Lake	Oakland	3N	7E,8E	7,12,13,18

I. PHYSICAL CHARACTERISTICS OF THE WATERBODY:

LAKE SIZE (ACRES): 562

MAXIMUM DEPTH (FEET): 32

MEAN DEPTH (FEET): 10.52

LAKE VOLUME (ACRE-FEET) – Include volume calculations as an attachment:

WHOLE LAKE = 5917

BASED ON 0-10 FEET DEPTH = 3917

SIZE OF LITTORAL ZONE (ACRES): 426 (0-20 ft)

SHORELINE LENGTH (FEET): 47864.88

SHORELINE DEVELOPMENT FACTOR: 5.456

RETENTION TIME (DAYS): 3,285 days (at least 9 years)

OUTLET FLOW RATE (CFS): No Outflow SOURCE: DEQ 1992 Kenaga Report

- ☒ Location Map – include a map showing the location of the waterbody within the county(ies).
- ☒ Bathymetric Map – include a map of the waterbody indicating the depth contours at five foot intervals. The following attributes must be identified on the map: tributaries, outlets, inlets, public and private access sites, public land, critical fish spawning areas, wetlands, special habitats, parks, and water control structures. See guidance for instructions.
- ☒ Land Use Map – include a map of the waterbody indicating the land use of the surrounding area. The following categories shall be used to describe the land use on the map: high density residential, low density residential, commercial/industry, agricultural, parks, and undeveloped areas.

II. WATER QUALITY INFORMATION:

Provide the water quality parameter measurements on the data sheet provided (Appendix). These parameters are required, at a minimum. If there are additional data available or additional space is required, please attach additional pages. See guidance for specific collection requirements.

- ☒ Water Quality Sampling Map – include a map of the waterbody indicating the sampling sites used to collect the water quality parameters.

III. BIOLOGICAL CHARACTERISTICS OF THE WATERBODY:

Total higher aquatic plant surface coverage (%) = 58%

- ☒ Aquatic Vegetation Map(s) and Data Analysis – include the results of an aquatic vegetation survey of the waterbody performed in August or September of the year prior to the proposed treatment. The survey and data analysis shall be performed according to DEQ's "Procedures for Aquatic Vegetation Surveys."
- ☐ Description of the Fish Community – include the source of the information and copies of any correspondence with fisheries biologists, anglers, natural resource groups, etc. Please attach the original comments as a separate sheet of paper.
- ☐ Description of the Wildlife Community - include the source of the information and copies of any correspondence with wildlife or habitat biologists. Please attach the original comments as a separate sheet of paper.
- ☐ Description of the Plant Community - include copies of any correspondence with the appropriate agencies. Please attach the original comments as a separate sheet of paper.
- ☐ Description of Special Concern, Threatened, or Endangered Species - include copies of any correspondence with Michigan Natural Features Inventory. Please attach as a separate sheet of paper.

IV. NUISANCE CONDITIONS:

List the current aquatic nuisance condition(s) occurring in the waterbody:

-Eurasian Water Milfoil
-Starry Stonewort
-Chara
-Eelgrass
-Illinois Pondweed

Indicate the activities that are being impaired by the nuisance conditions:

- ☒ Swimming
☒ Boating
☒ Fishing
☐ Hunting
☐ Other: _____

- ☒ Target Species Map – include a map of the waterbody indicating the current location(s) of each targeted nuisance species.

V. MANAGEMENT GOALS:

Indicate the appropriate management goals that are the desired outcome(s) of this program.

- ☒ Create/Maintain Swimming Areas
- ☒ Create/Protect Fish/Wildlife Habitat
- ☒ Improve Native Plant Diversity
- ☐ Protect Endangered/Threatened Species
- ☒ Create Areas for Recreational Use (boating, water skiing, fishing, etc.)
- ☒ Remove Exotic Plant Species
- ☐ Other: _____

- ☒ Management Goal Maps – include map(s) indicating locations where each of the goals may be achieved through the proposed management activities.

VI. HISTORY OF WATERBODY MANAGEMENT:

- ☒ Provide a written description of the management activities performed on the waterbody within the past ten years. Include mechanical, chemical, or biological control efforts, lake level manipulation, dredging, and fish stocking activities (including species stocked and stocking schedule).

VII. MANAGEMENT OPTIONS:

List all management options considered to achieve the goals established for this waterbody:

- Harvesting
- Herbicides
- Milfoil Weevil

Why was the proposed management option chosen over other options?

Fluridone has a proven history that shows it is able to affectively control Eurasian and Hybrid Milfoil for the year of application and into the year after treatment. Other options are too costly, un-proven or may fragment the milfoil.

VIII. VEGETATION MANAGEMENT PLAN:

Propose a three-year aquatic vegetation management plan that will be used to attain the management goals for this project by checking the appropriate box(es) below. Include a brief summary for each year of the plan that prioritizes and describes the management strategy. For example:

Year 2: 2006

1. Eurasian watermilfoil control – control any offshore reoccurrences of EWM using granular 2,4-D, reoccurrences within well isolation distances will be controlled using Renovate 3 (if budget allows) or Reward...

Year 1: 2016

	Fluridone	Algaecides/ Contacts	Harvesting	Biological Control	Other
<i>Exotic Submerged Species</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Algae/ Nuisance Natives</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Prioritize and provide a detailed description of your proposed treatment strategy:

Even distribution of SonarONE (5%fluridone pellet) throughout the lake at a rate of 4 ppb with a 2-3 ppb bump followed by another 2-3 ppb bump with approximately 4-6 weeks in between treatments. The initial application will take place around the first week of May. The target plant is Eurasian and hybrid watermilfoil. Nuisance algae and Starry Stonewort will be managed with algaecides such as Copper Sulfate and Chelated Copper Algaecides. Contacts herbicide for nuisance native around docks, beaches and boat lanes.

Year 2: 2017

	Systemic herbicides	Contact herbicides	Algaecides	Harvesting	Biological Control	Other
<i>Exotic Submerged Species</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Native Submerged Species</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Emergent Species</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Algae</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Prioritize and provide a detailed description of your proposed treatment strategy:

We expect little, if any Milfoil to return to the lake in 2017. Any plants that do grow will be treated with systemic herbicides wherever feasible (2,4-D, Triclopyr). Contacts may also be used on limited basis. Native plants will be primarily managed with contact herbicides such as Chelated Copper Herbicides, Diquat Dibromide and Aquathol K or a combination of all 3 products. Nuisance algae and Starry Stonewort will be managed with algaecides such as Copper Sulfate and Chelated Copper Algaecides.

VEGETATION MANAGEMENT PLAN (CONTINUED)

Year 3: 2018

	Systemic herbicides	Contact herbicides	Algaecides	Harvesting	Biological Control	Other
<i>Exotic Submerged Species</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Native Submerged Species</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Emergent Species</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Algae</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Prioritize and provide a detailed description of your proposed treatment strategy:

It is possible that the Milfoil will return to nuisance levels in 2018. These plants will be treated with systemic herbicides wherever feasible (2,4-D, Triclopyr). Contacts may also be used on limited basis. Native plants will be primarily managed with contact herbicides such as Chelated Copper Herbicides, Diquat Dibromide and Aquathol K or a combination of all 3 products. Nuisance algae and Starry Stonewort will be managed with algaecides such as Copper Sulfate and Chelated Copper Algaecides.

- ☒ Annual Vegetation Management Maps – include maps showing areas of management for each year. Be sure to compare the Management Goal Maps with the Annual Vegetation Management Maps to ensure that the proposed treatments are consistent with the management goals.
- ☒ Fluridone Distribution Map – include a map of the waterbody indicating the proposed path of fluridone distribution in the lake.
- ☒ Fluridone Calculations – include any calculations used to determine the amount of fluridone requested for use.

This will be a 4-2-2. The initial treatment will be 4 ppb treated to thermocline. The following bump applications will be approximately 2-3 ppb treated to the thermocline, with the goal to keep in water concentrations between 2-4 ppb for 120 days. For these calculation the thermocline be estimated to be 15 ft.

4 ppb treatment - $4 \text{ (fluridone concentration in ppb)} \times 4941 \text{ aft (upper 15 ft)} \times .054 = 1067 \text{ lbs}$
(1080 rounded to nearest pale)

2 ppb treatments - $2 \text{ (fluridone concentration in ppb)} \times 4941 \text{ aft (upper 15 ft)} \times .054 = 533 \text{ lbs}$
(540 rounded to nearest pale)

IX. MONITORING AND EVALUATION:

List the proposed monitoring activities to be performed on the waterbody during the 3 years of the management plan, include proposed date(s) of each activity. Be as specific as possible.

Proposed Activity:

Proposed Date(s)

☒ Aquatic vegetation survey

2016, 2017, 2018

☒ Fluridone residue sampling

48-60 hours post initial, 14 days, 30 days, 60 days

☐ EffectTEST™

☒ PlanTEST™

Collected in 2015, results pending

☐ Water quality sampling

Spring and Fall 2015

☐ Fish surveys

☐ Other: _____

Describe how the monitoring results will be used to evaluate the success of this program in achieving the stated management goals:

Management Goals (from Section V.)

How will you evaluate your success of this goal using the monitoring results?

2016- The main goal of this treatment is to greatly reduce the amount of the Eurasian Water Milfoil present in the lake by June/ early July on the year of the initial application.

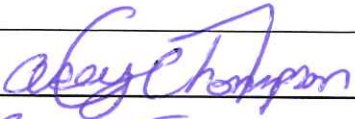
Late Summer 2016 plant survey.

☒ Fluridone Residue Sampling Map – include a map of the waterbody showing locations where residue samples will be collected. Number each sample site.

X. LAKE MANAGEMENT PLAN DEVELOPMENT:

Who has participated in developing the lake management plan for this project?

- | | |
|---|--|
| <input checked="" type="checkbox"/> Commercial Applicator | <input type="checkbox"/> State Agency(ies) (specify) _____ |
| <input type="checkbox"/> Lake Consultant | <input type="checkbox"/> Park Administrator/Board |
| <input checked="" type="checkbox"/> Lake Board | <input type="checkbox"/> Group of Individual Riparians |
| <input checked="" type="checkbox"/> Lake Association | <input type="checkbox"/> Back Lot Owner(s) |
| <input type="checkbox"/> Township(s)/County(ies) | <input type="checkbox"/> Other (specify) __SePRO_____ |
- ☐ Documentation of Lake Management Plan Development – provide documentation of participation in development of this Lake Management Plan by stakeholders and agencies responsible for managing public trust resources. Attach meeting minutes and other correspondence separately.

Lake Management Plan prepared by:  (signature)
CASEY C THOMPSON (print name)
Date: 12/29/15

LAKE MANAGEMENT PLAN APPENDIX

WATER QUALITY DATA

Waterbody Name: White Lake

County: Oakland

Temperature and Dissolved Oxygen:		Date measured: 8/18/2015	
Depth measured (feet)	Temperature (°C)	Dissolved Oxygen (mg/L)	
0	26.3	15.70	
1	26.3	15.05	
2	26.1	14.90	
3	26.0	14.79	
4	25.9	14.32	
5	25.8	14.10	
6	25.7	13.72	
7	25.7	13.12	
8	25.7	12.29	
9	25.6	11.81	
10	25.6	11.27	
11	25.5	11.91	
12	25.5	11.60	
13	25.5	11.31	
14	25.4	12.00	
15	24.9	12.71	
16	24.6	13.01	
17	24.5	13.32	
18	24.7	13.87	
19	22.6	12.72	
20	21.0	12.81	
Transparency:			
Date measured:		Secchi Disk Transparency (feet)	
4-22-15		12.3	
5-27-15		10.2	
6-19-15		8.7	
7-28-15		15.2	
8-18-15		9.0	
9-4-15		10.8	
Total Phosphorus and Total Alkalinity:			
	Date measured	Total phosphorus (µg/L)	Total alkalinity (mg CaCO ₃ /L)
Surface sample at spring turnover	4/22/2015	54.5	186
Deep sample	8/18/2015	52.7	



AQUA-WEED CONTROL, INC.
11245 Milford Rd., Holly, MI 48442

248 634-8388
248 634-8870 Fax
Web Site: www.aquaweed.com
E-mail: awc@aquaweed.com

White Lake 10 Year Management History

Year	Management Activity
2015	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2014	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2013	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2012	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2011	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2010	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2009	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2008	Nuisance and invasive plant control using Fluridone and copper sulfate
2007	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone
2006	Nuisance and invasive plant control using permitted herbicides and algaecides other than Fluridone

No harvesting activity any year.

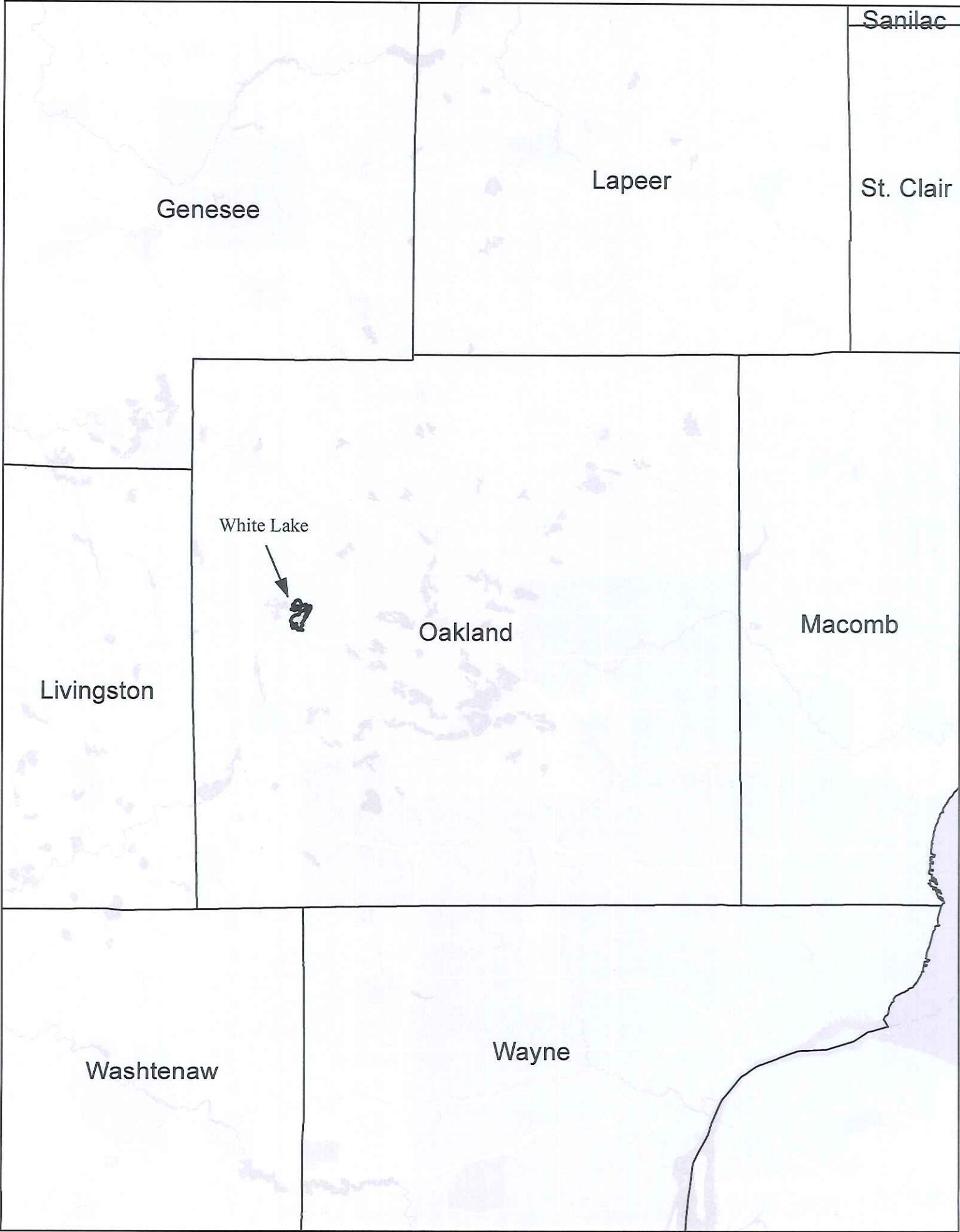
Past Fluridone use: (not total list)

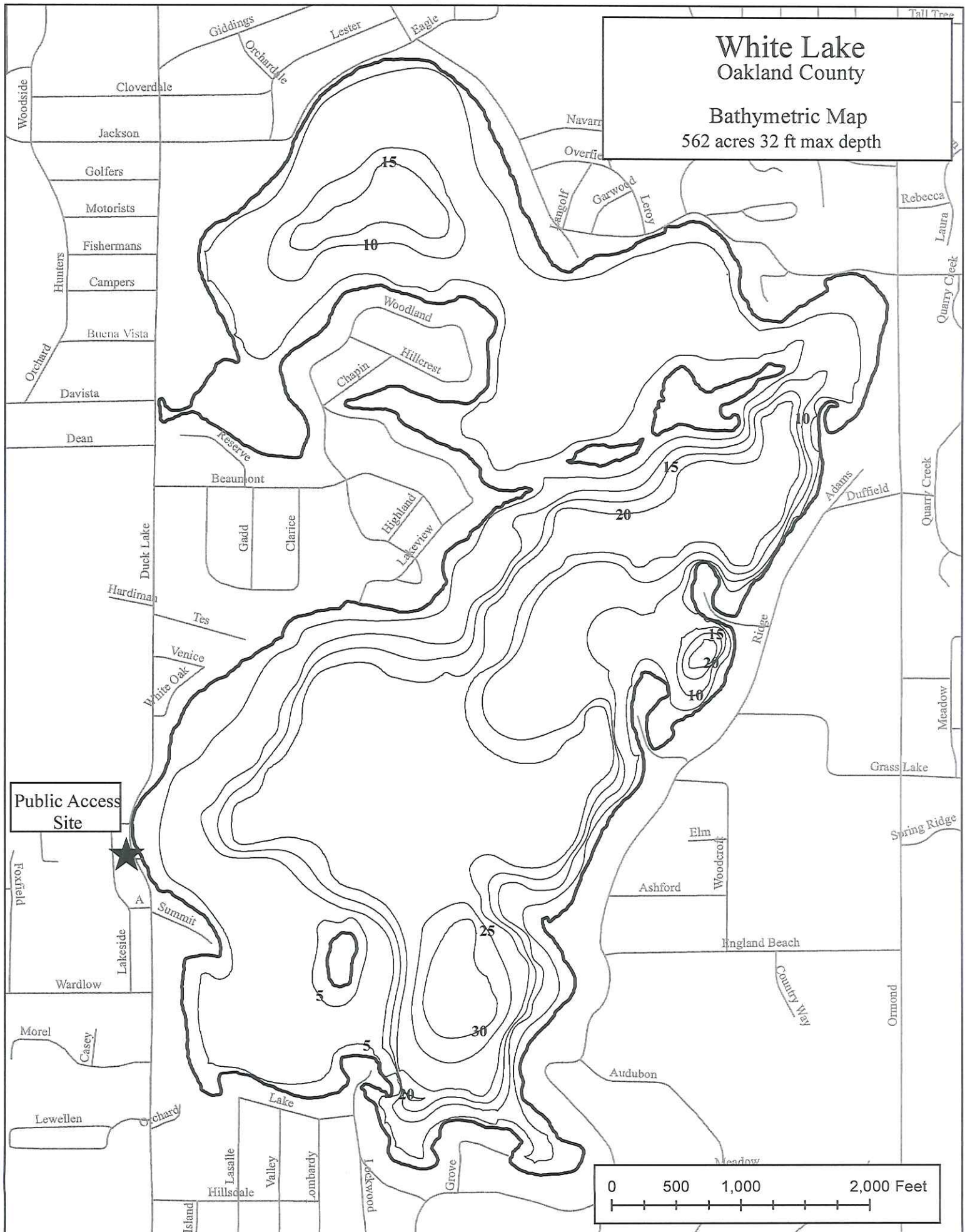
2008 - 6 PPB / bump-up back to 6 PPB. Results where satisfactory regarding control in treatment year. Fluridone at rate permitted controlled the target plant (EWM) by mid July with minimal to no impact on native plant species. EWM present in 2009 requiring management.

2003 - 6 PPB / bump-up back to 6 PPB. Results where satisfactory regarding control in treatment year. Fluridone at rate permitted controlled the target plant (EWM) by mid July with minimal to no impact on native plant species. EWM present in 2004 requiring management.

2000 - 6 PPB / bump-up back to 6 PPB. Results where satisfactory. Fluridone at rate permitted controlled the target plant (EWM) by mid July of 2000 with minimal to no impact on native plant species. EWM present in 2001 requiring management.

1999 - 5 PPB no bump. Treatment failure. Some impact however EWM present in lake through out the summer.



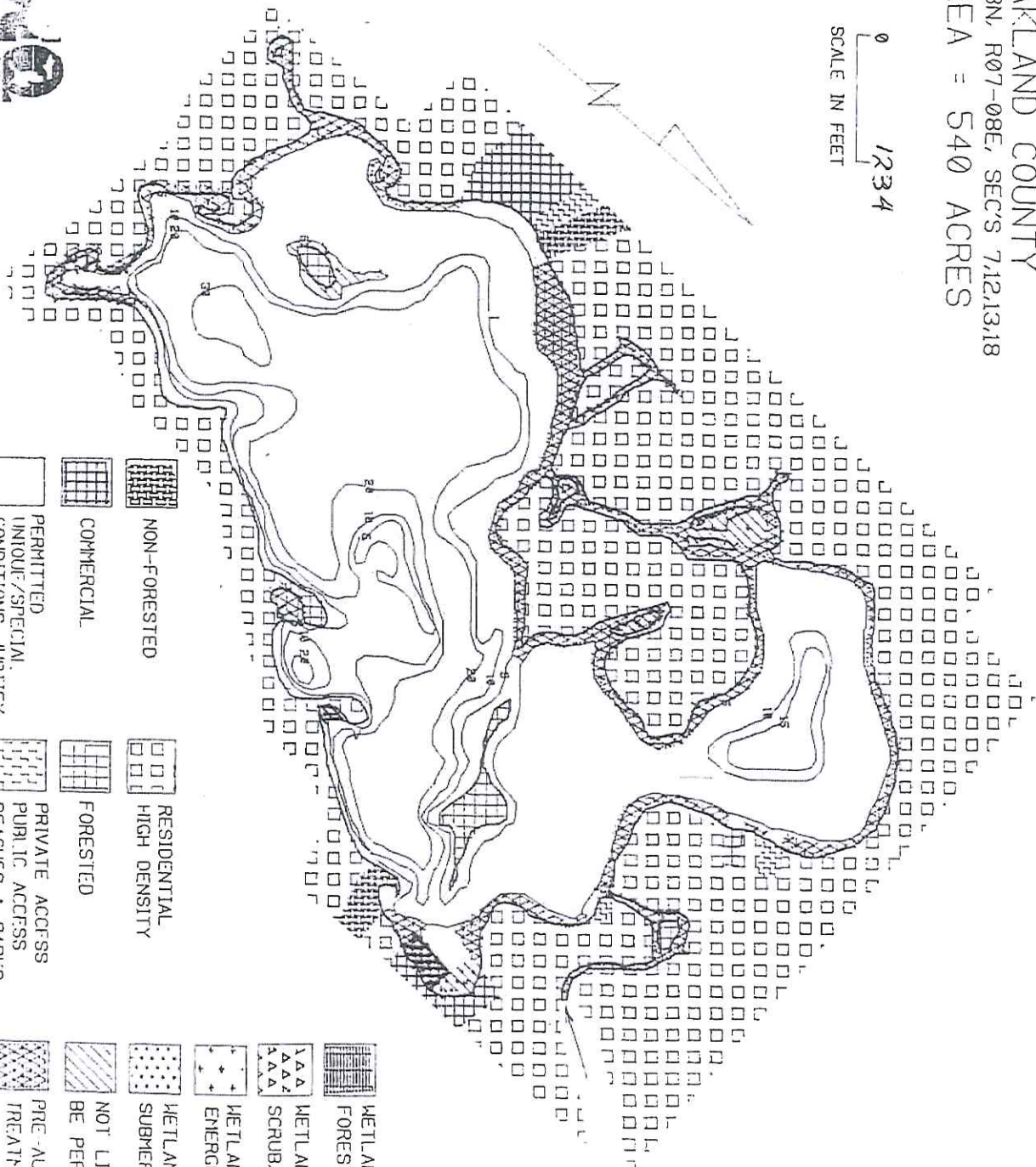
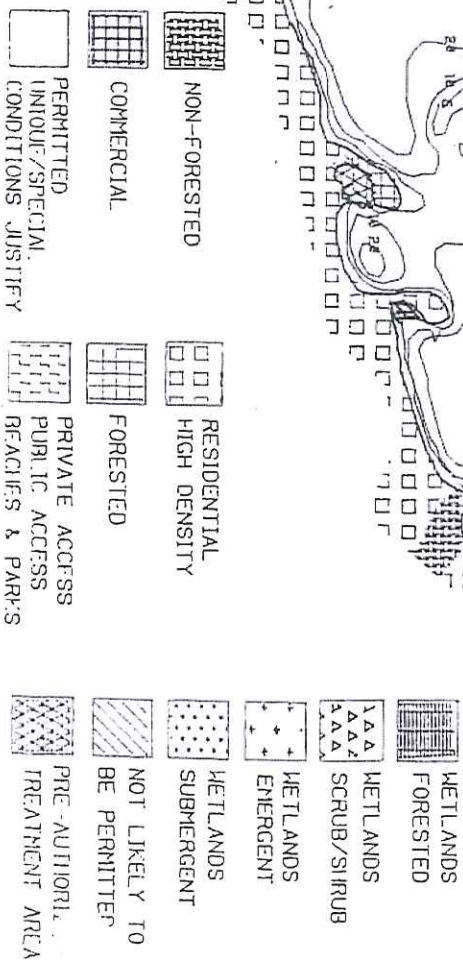


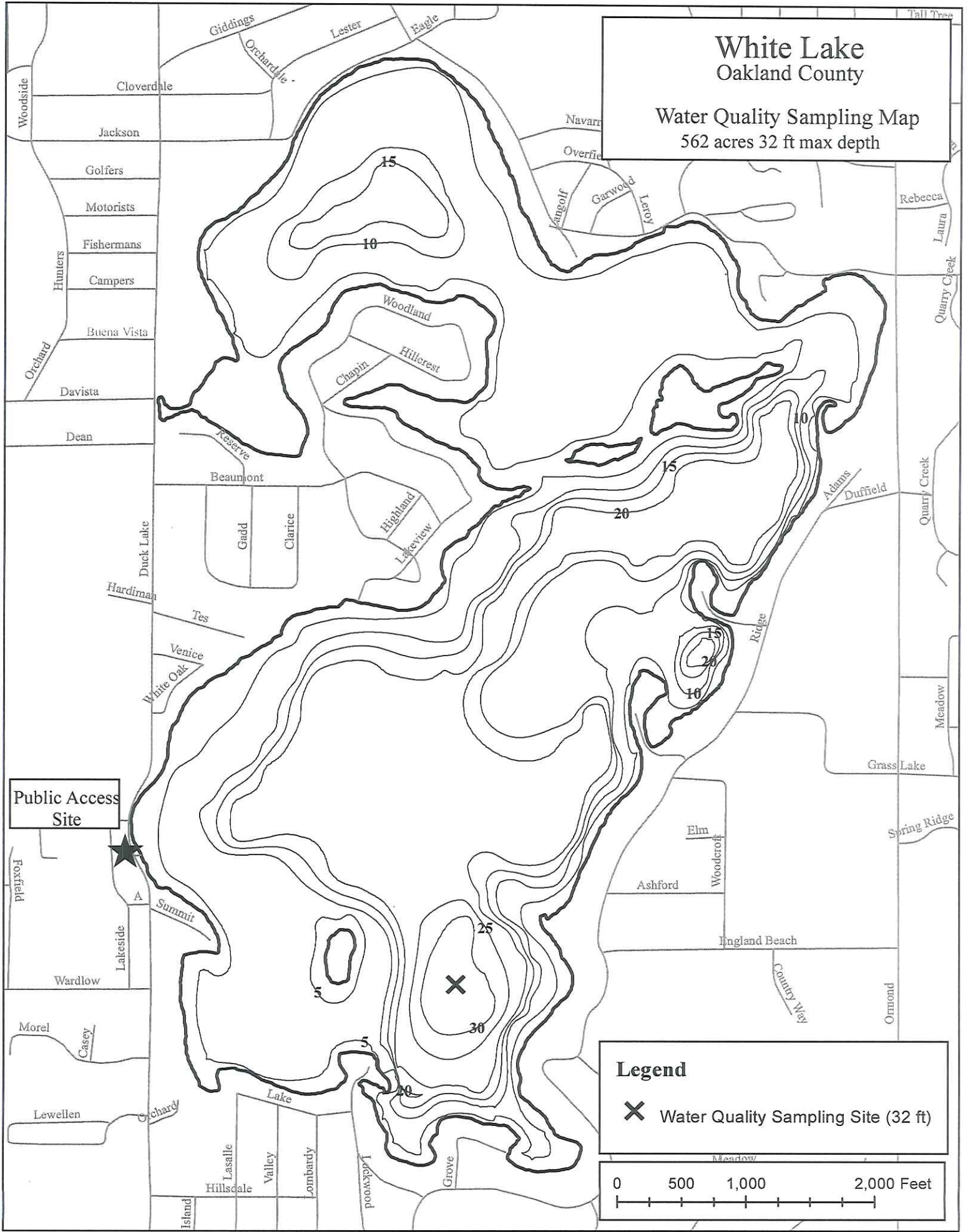
WHITE LAKE OAKLAND COUNTY T03N, R07-08E, SECS 7,12,13,18 AREA = 540 ACRES

Land use Map

0 1/2 3/4
SCALE IN FEET

N





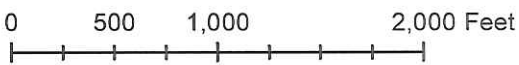
White Lake
Oakland County
Aquatic Vegetation Map
August 18th, 2015
562 acres 32 ft max depth

Legend

- Vegetation Found
- No Vegetation Found

0 500 1,000 2,000 Feet

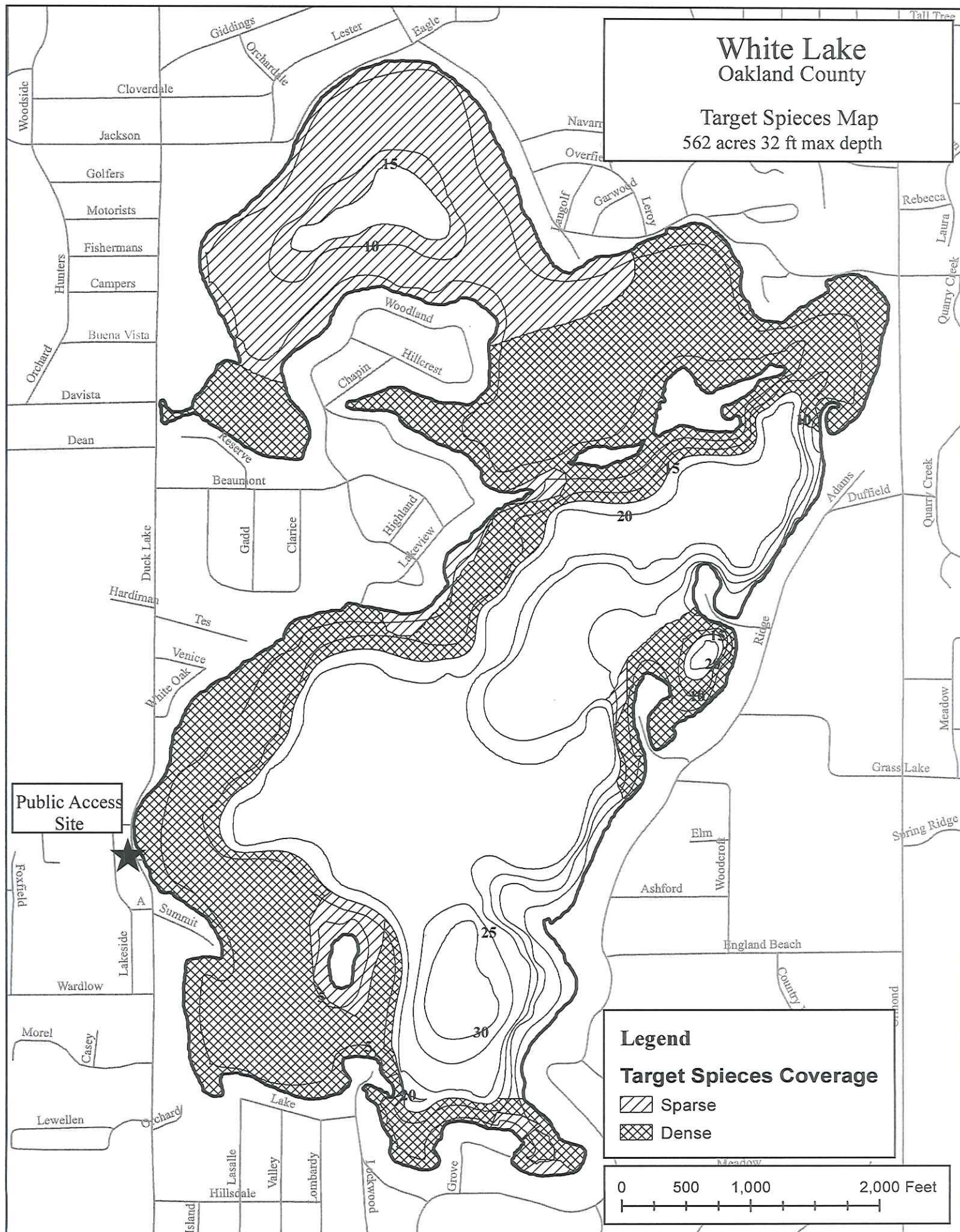
- Vegetation Found
- No Vegetation Found

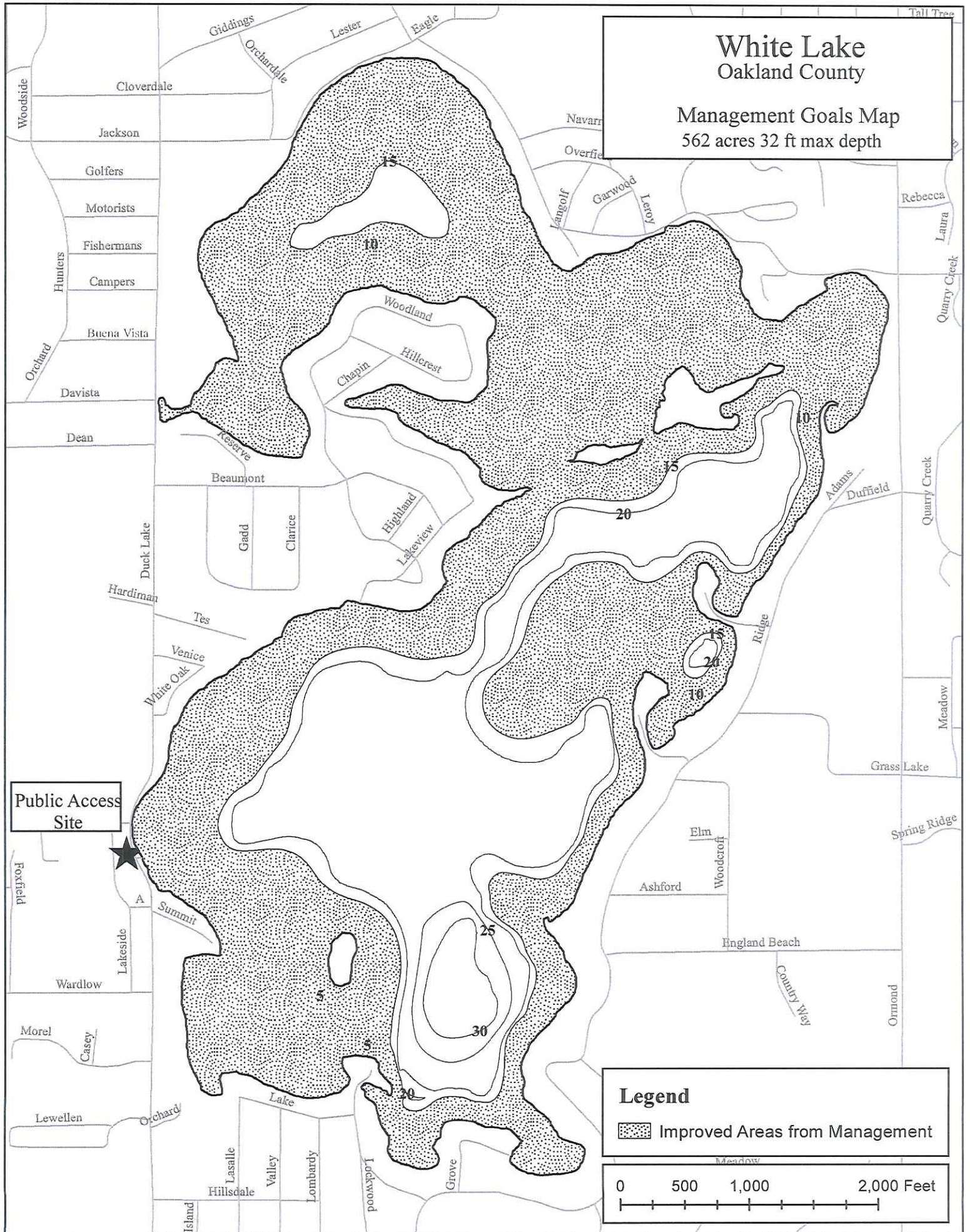


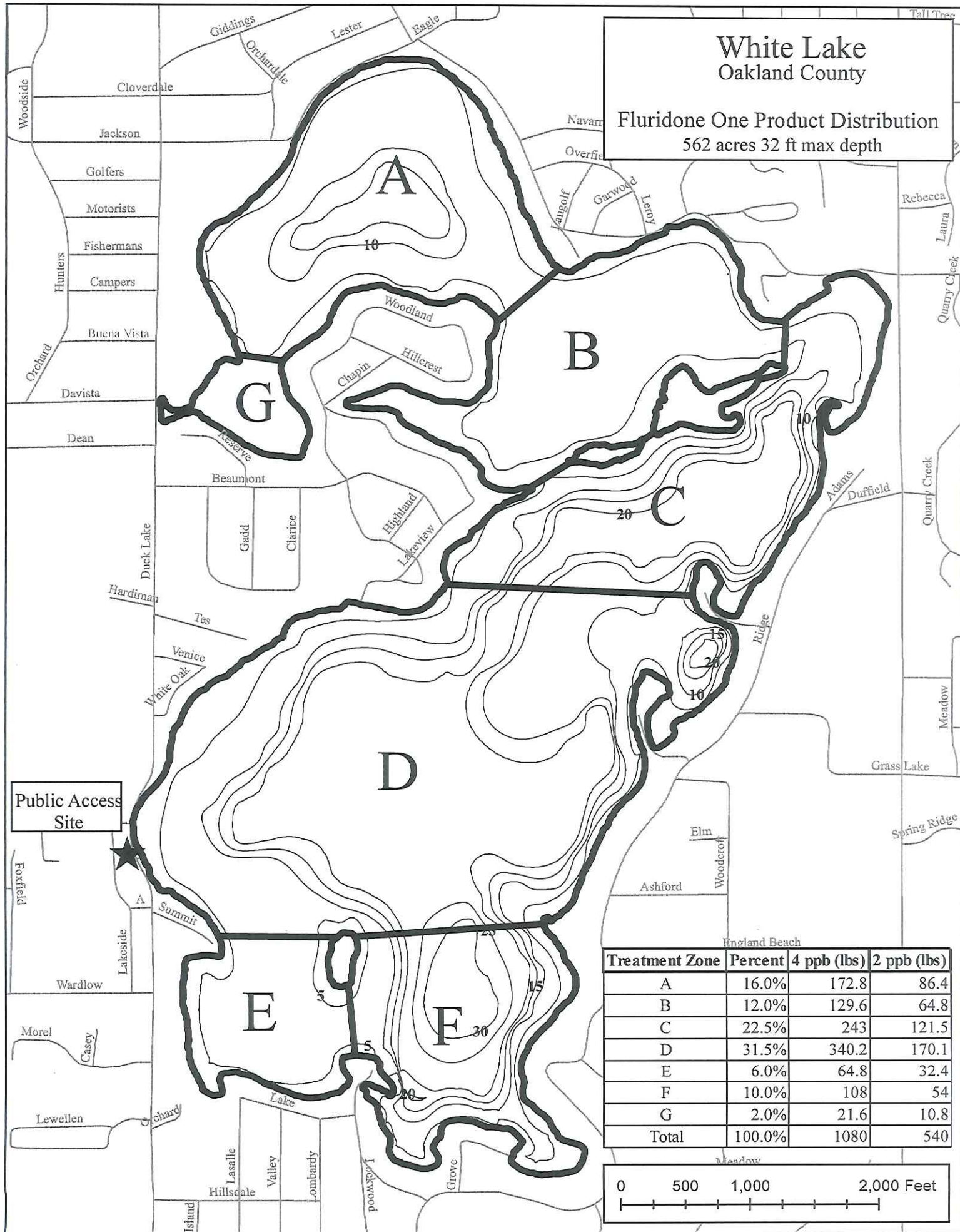
Standard Aquatic Vegetation Summary Sheet

SURVEY BY: SePRO 11550 N Meridian St # 600, Carmel, IN 46032

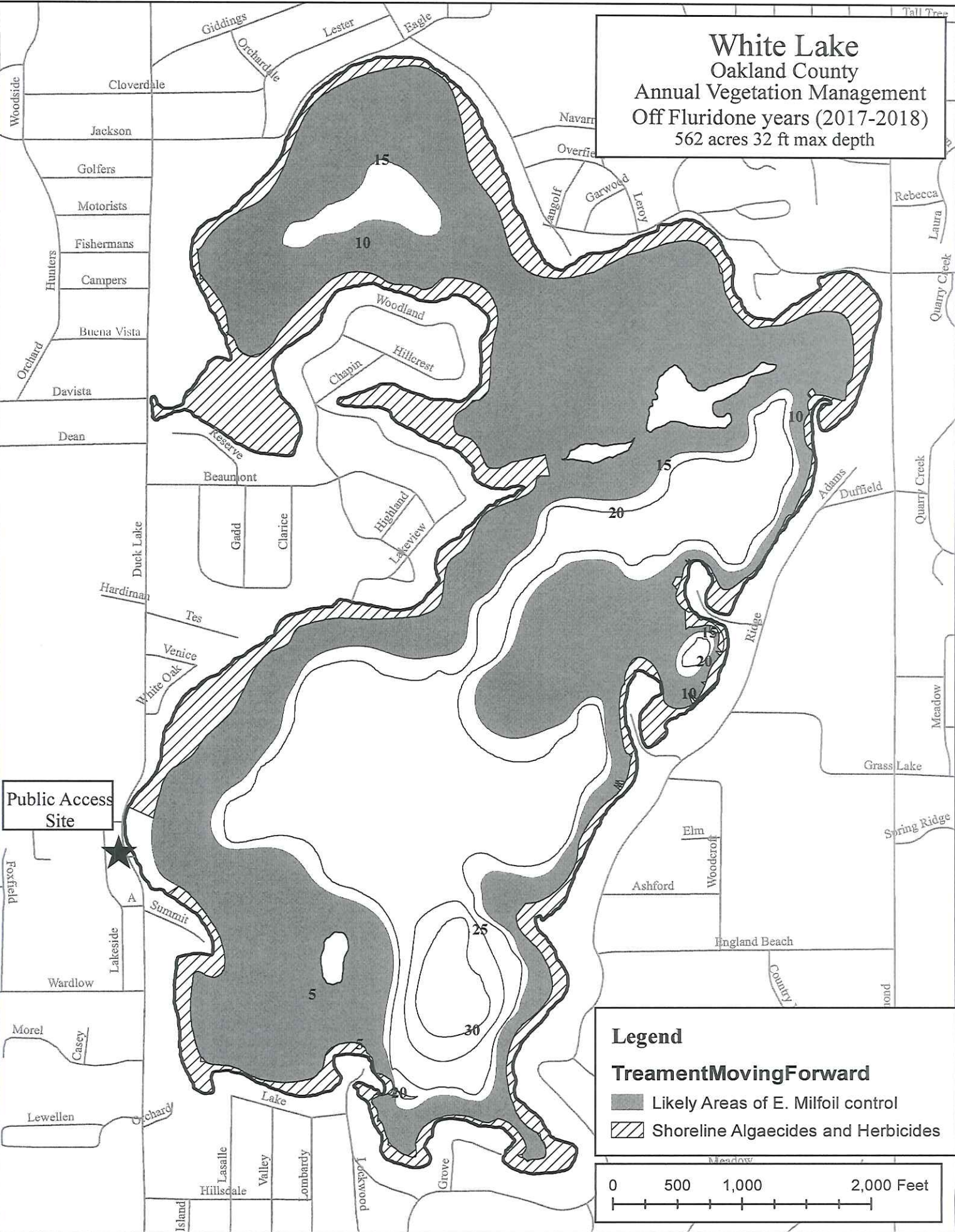
Code No	Plant Name	Total number of AVAS's for each Density Category				Calculations				Sum of Previous Four Columns	Total Number of AVAS's	Quotient of Column 9 divided by Column 10	Code No	Plant Name
		A	B	C	D	Category A x 1	Category B x 10	Category C x 40	Category D x 80					
		1	2	3	4	5	6	7	8					
1	Eurasian milfoi	12	7	46	52	12	70	1840	4160	6082	180	33.8	1	Eurasian milfoi
2	Curly leaf pondweec					0	0	0	0	0	180	0.0	2	Curly leaf pondweec
3	Chara	21	1	17	19	21	10	680	1520	2231	180	12.4	3	Chara
4	Thinleaf pondweec				1	0	0	0	80	80	180	0.4	4	Thinleaf pondweec
5	Flatstem pondweed					0	0	0	0	0	180	0.0	5	Flatstem pondweed
6	Robbins pondweec					0	0	0	0	0	180	0.0	6	Robbins pondweec
7	Variable pondweed					0	0	0	0	0	180	0.0	7	Variable pondweed
8	Whitestem pondweed					0	0	0	0	0	180	0.0	8	Whitestem pondweed
9	Richardsons pondweec					0	0	0	0	0	180	0.0	9	Richardsons pondweec
10	Illinois pondweec	25		3	64	25	0	120	5120	5265	180	29.3	10	Illinois pondweec
11	Large leaf pondweed					0	0	0	0	0	180	0.0	11	Large leaf pondweed
12	American pondweec					0	0	0	0	0	180	0.0	12	American pondweec
13	Floating leaf pondweec					0	0	0	0	0	180	0.0	13	Floating leaf pondweec
14	Water stargrass					0	0	0	0	0	180	0.0	14	Water stargrass
15	Wild Celery	6		3	28	6	0	120	2240	2366	180	13.1	15	Wild Celery
16	Sagittaria					0	0	0	0	0	180	0.0	16	Sagittaria
17	Northern milfoi					0	0	0	0	0	180	0.0	17	Northern milfoi
18	M. verticillatum					0	0	0	0	0	180	0.0	18	M. verticillatum
19	M. heterophyllum					0	0	0	0	0	180	0.0	19	M. heterophyllum
20	Coontail					0	0	0	0	0	180	0.0	20	Coontail
21	Elodea					0	0	0	0	0	180	0.0	21	Elodea
22	Utricularia spp.					0	0	0	0	0	180	0.0	22	Utricularia spp.
23	Bladderwort-min					0	0	0	0	0	180	0.0	23	Bladderwort-min
24	Buttercup					0	0	0	0	0	180	0.0	24	Buttercup
25	Najas spp.				1	0	0	0	80	80	180	0.4	25	Najas spp.
26	Brittle naiad					0	0	0	0	0	180	0.0	26	Brittle naiad
27	Sago pondweed				1	0	0	0	80	80	180	0.4	27	Sago pondweed
28	Starry Stonewort	7			7	7	0	0	560	567	180	3.2	28	
29	Wa					0	0	0	0	0	180	0.0	29	
30	Nymphaea					0	0	0	0	0	180	0.0	30	Nymphaea
31	Nuphar	24		1		24	0	40	0	64	180	0.4	31	Nuphar
32	Brasenia					0	0	0	0	0	180	0.0	32	Brasenia
33	Lemna minor					0	0	0	0	0	180	0.0	33	Lemna minor
34	Spirodella					0	0	0	0	0	180	0.0	34	Spirodella
35	Watermeal					0	0	0	0	0	180	0.0	35	Watermeal
36	Arrowhead					0	0	0	0	0	180	0.0	36	Arrowhead
37	Pickerelweed					0	0	0	0	0	180	0.0	37	Pickerelweed
38	Arrow Arum					0	0	0	0	0	180	0.0	38	Arrow Arum
39	Cattails	4				4	0	0	0	4	180	0.0	39	Cattails
40	Bulrushes					0	0	0	0	0	180	0.0	40	Bulrushes
41	Iris					0	0	0	0	0	180	0.0	41	Iris
42	Swamp Loosestrife					0	0	0	0	0	180	0.0	42	Swamp Loosestrife
43	Purple Loosestrife					0	0	0	0	0	180	0.0	43	Purple Loosestrife
44						0	0	0	0	0	180	0.0	44	
45						0	0	0	0	0	180	0.0	45	



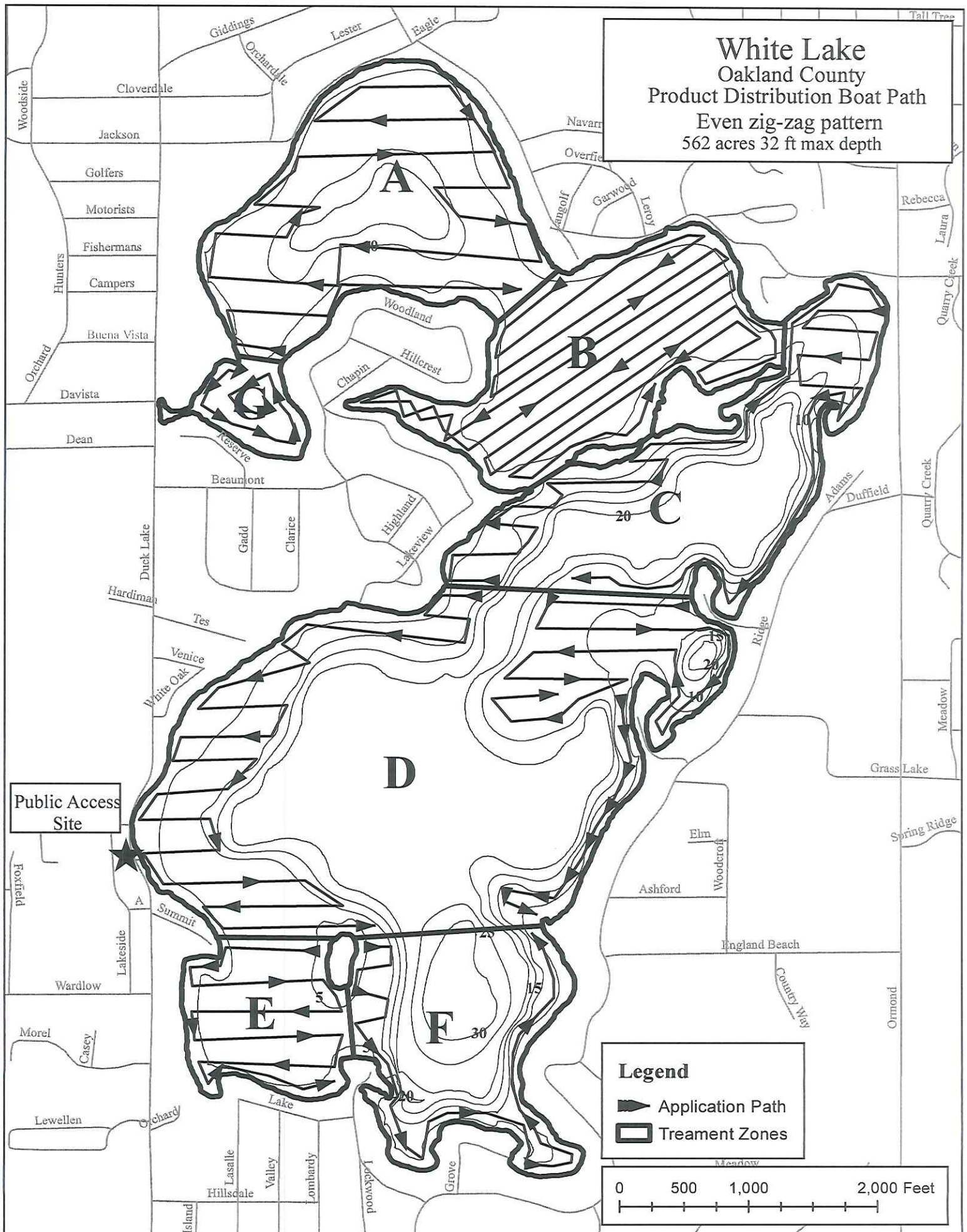




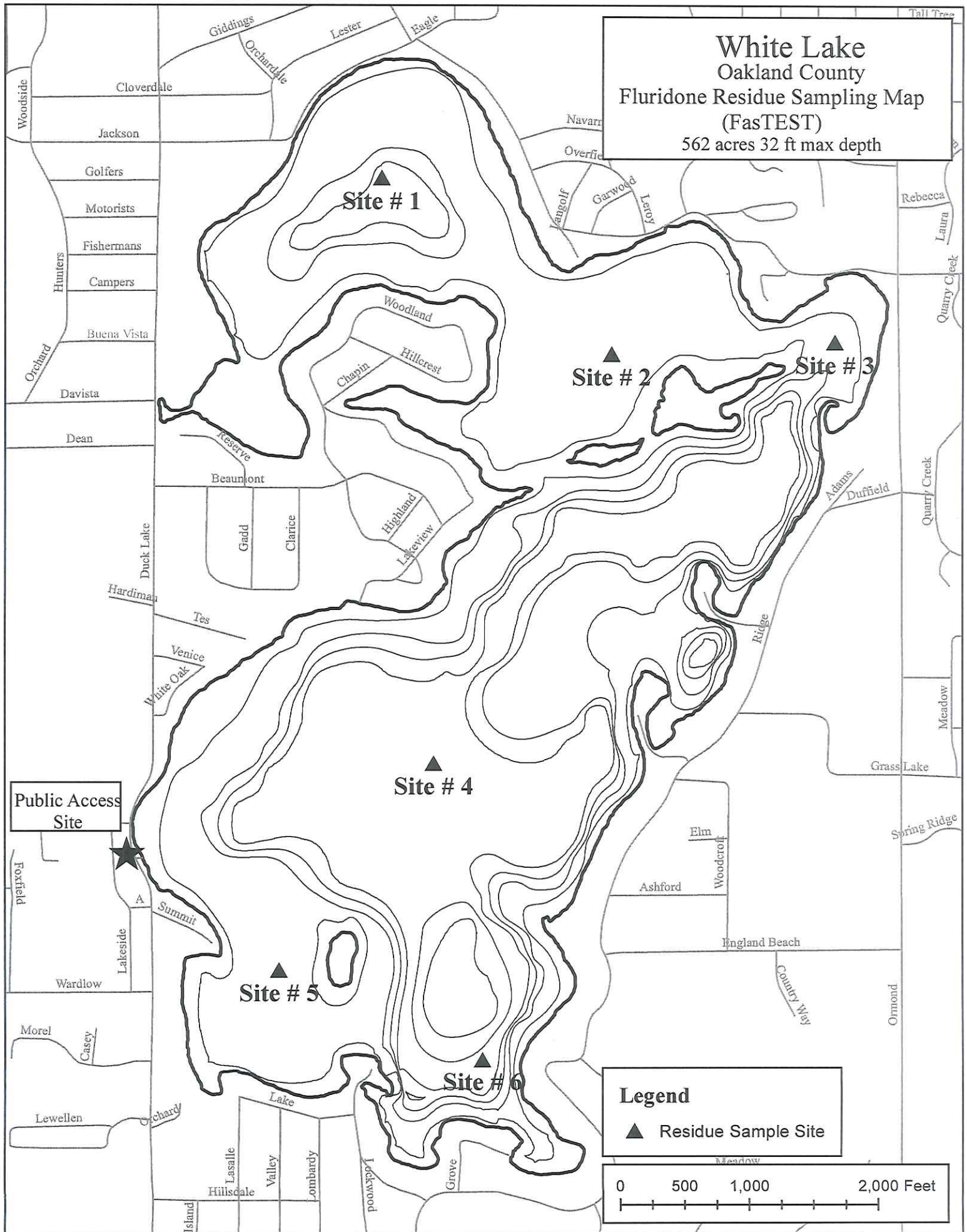
White Lake Oakland County Annual Vegetation Management Off Fluridone years (2017-2018) 562 acres 32 ft max depth



White Lake
Oakland County
Product Distribution Boat Path
Even zig-zag pattern
562 acres 32 ft max depth



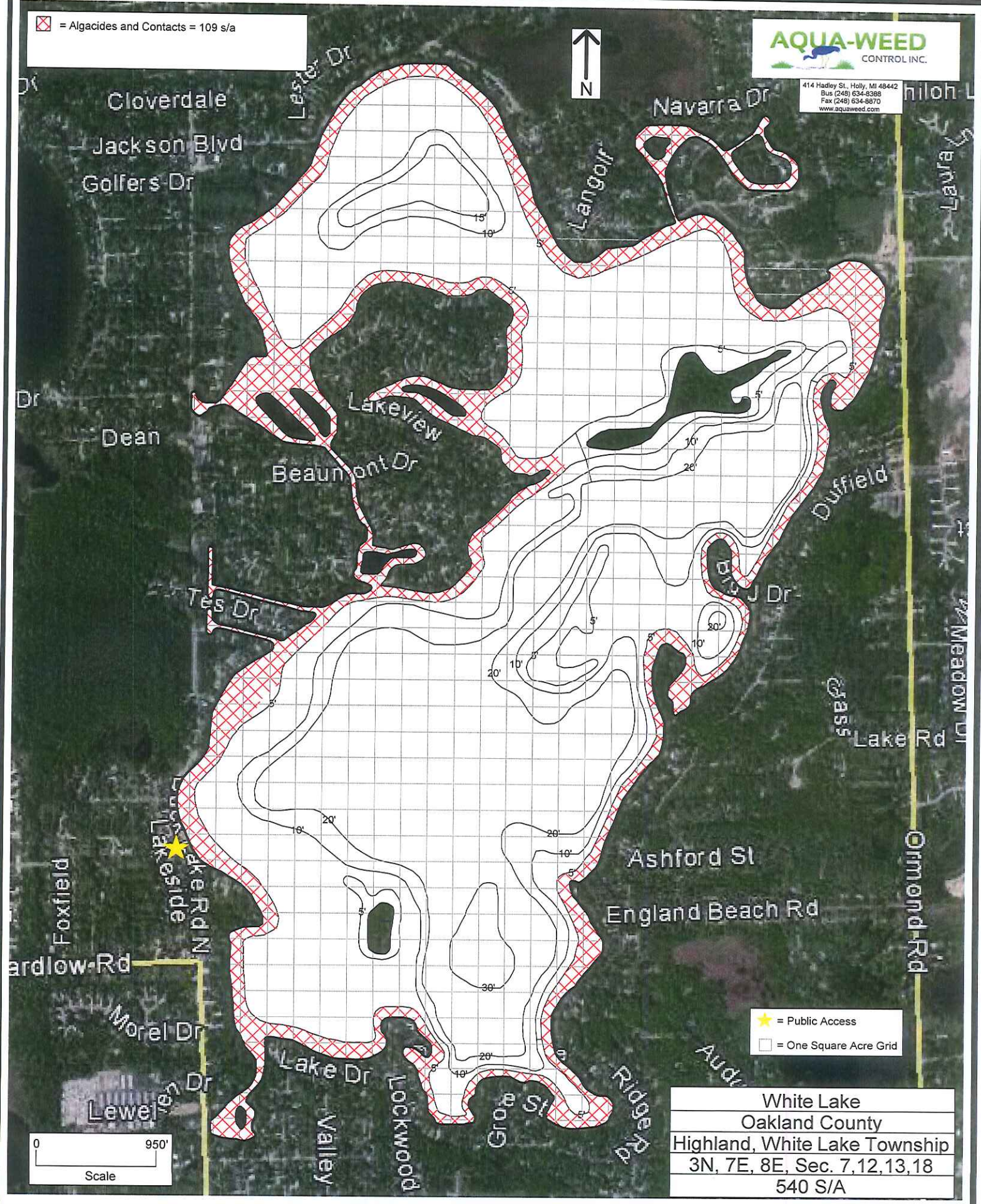
White Lake
Oakland County
Fluridone Residue Sampling Map
(FastEST)
562 acres 32 ft max depth



☒ = Algicides and Contacts = 109 s/a

AQUA-WEED
CONTROL INC.

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★ = Public Access

☐ = One Square Acre Grid

White Lake
Oakland County
Highland, White Lake Township
3N, 7E, 8E, Sec. 7, 12, 13, 18
540 S/A