

Northwest Aquatic Management, LLC

9727 Hwy 12 West #815

Rochester, WA 98579

(360) 870-4362

nwaqua.com



Capitol Lake

Weed Management Services

2017 Annual Report

December 20, 2017

Northwest Aquatic Management, LLC



Prepared for:
Carrie Martin
Department of Enterprise Services
State of Washington

Prepared by:
Kyle Steelhammer
President
Northwest Aquatic Management, LLC
(360) 870-4362

Northwest Aquatic Management, LLC

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Introduction

Capitol Lake is a 260-acre lake located on the Washington State Capitol Campus in Olympia and Tumwater. It was created in 1951 when a dam was constructed at the mouth of the Deschutes River, blocking the tidal action of Puget Sound, to form a reflecting pool for the Legislative (Capitol) Building.

Since May 7, 2008 Northwest Aquatic Management, LLC has managed noxious and aquatic weeds in and around Capitol Lake under the direction of the State of Washington Department of Enterprise Services.

Those noxious weeds included Eurasian Watermilfoil (*Myriophyllum spicatum*), Yellow Flag Iris (*Iris pseudacorus*) Purple Loosestrife (*Lythrum salicaria*) and Fragrant White-Water lily (*Nymphaea odorata*). Other macrophytes observed in and around Capitol Lake were:

- Elodea (*Egria canadensis*)
- Coontail (*Ceratophyllum demersum*)
- Large-leaved Pondweed (*Potamogeton amplifolius*)
- Thin-Leaved Pondweed (*Potamogeton nodosus*)
- Curlyleaf Pondweed (*Potamogeton crispus*)
- White Stem Pondweed (*Potamogeton paelongus*)
- Brittleworts (*Nitella*)

Non-aquatic noxious weeds observed,

- Butterfly Bush
- Japanese Knotweed

In the peak of the weed growing season it is estimated that 80% of the lakebed is covered with native vegetation.

Capitol Lake is a rapidly changing eco-system, which responds differently every year to various environmental conditions.

Significant changes observed in recent years include:

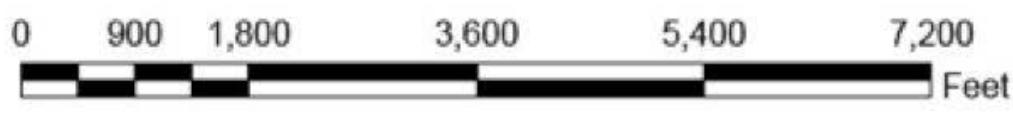
- Explosive spread of Thin-Leaved Pondweed (*Potamogeton nodosus*)
- Deposition of sediments
- Infestation of New Zealand Mud Snails
- Increase in Eurasian Watermilfoil

Eurasian Watermilfoil (*Myriophyllum spicatum*)



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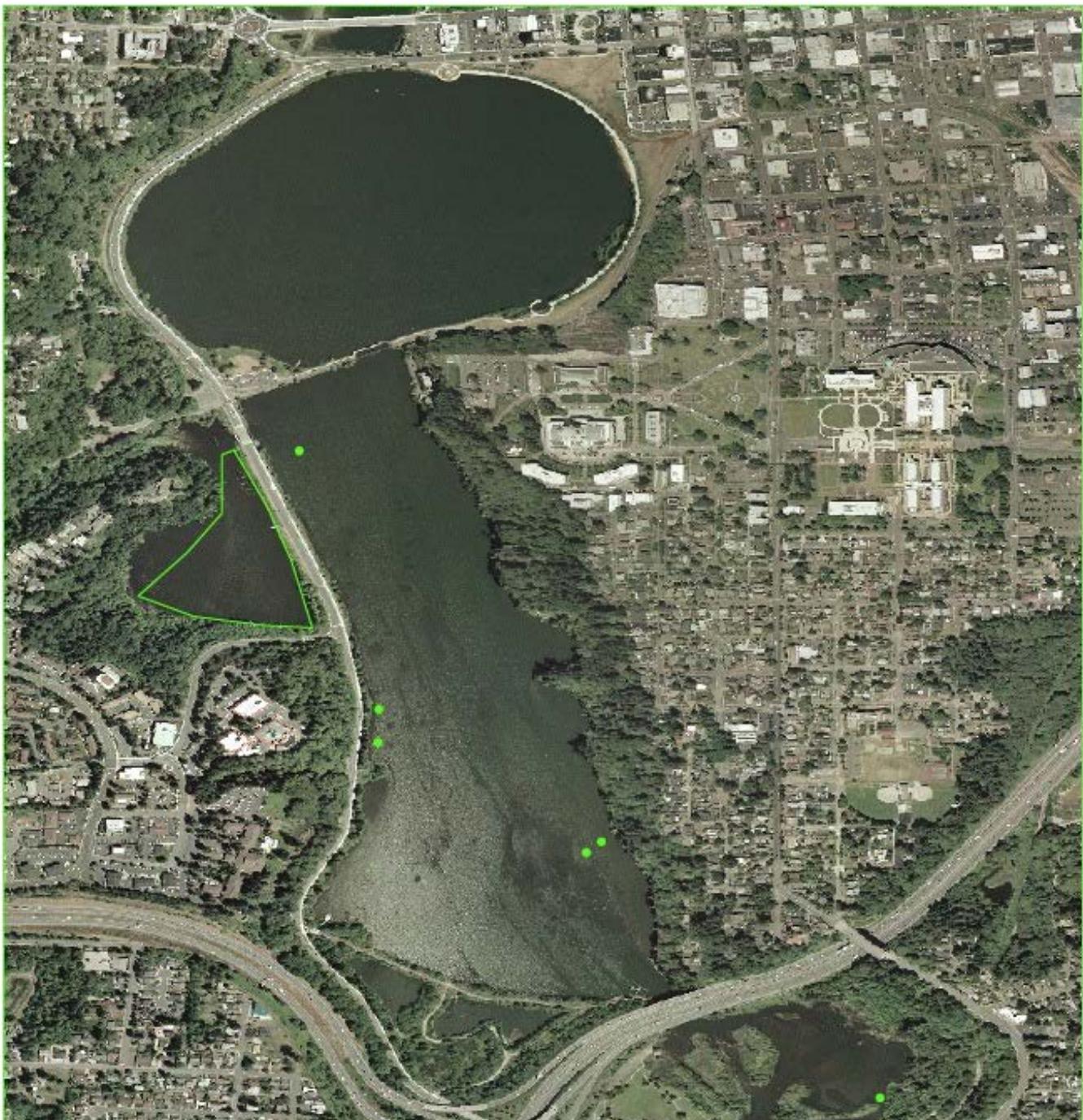
Capitol Lake 2013 Eurasian Watermilfoil Survey





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Capitol Lake 2014 Eurasian Milfoil Infestation



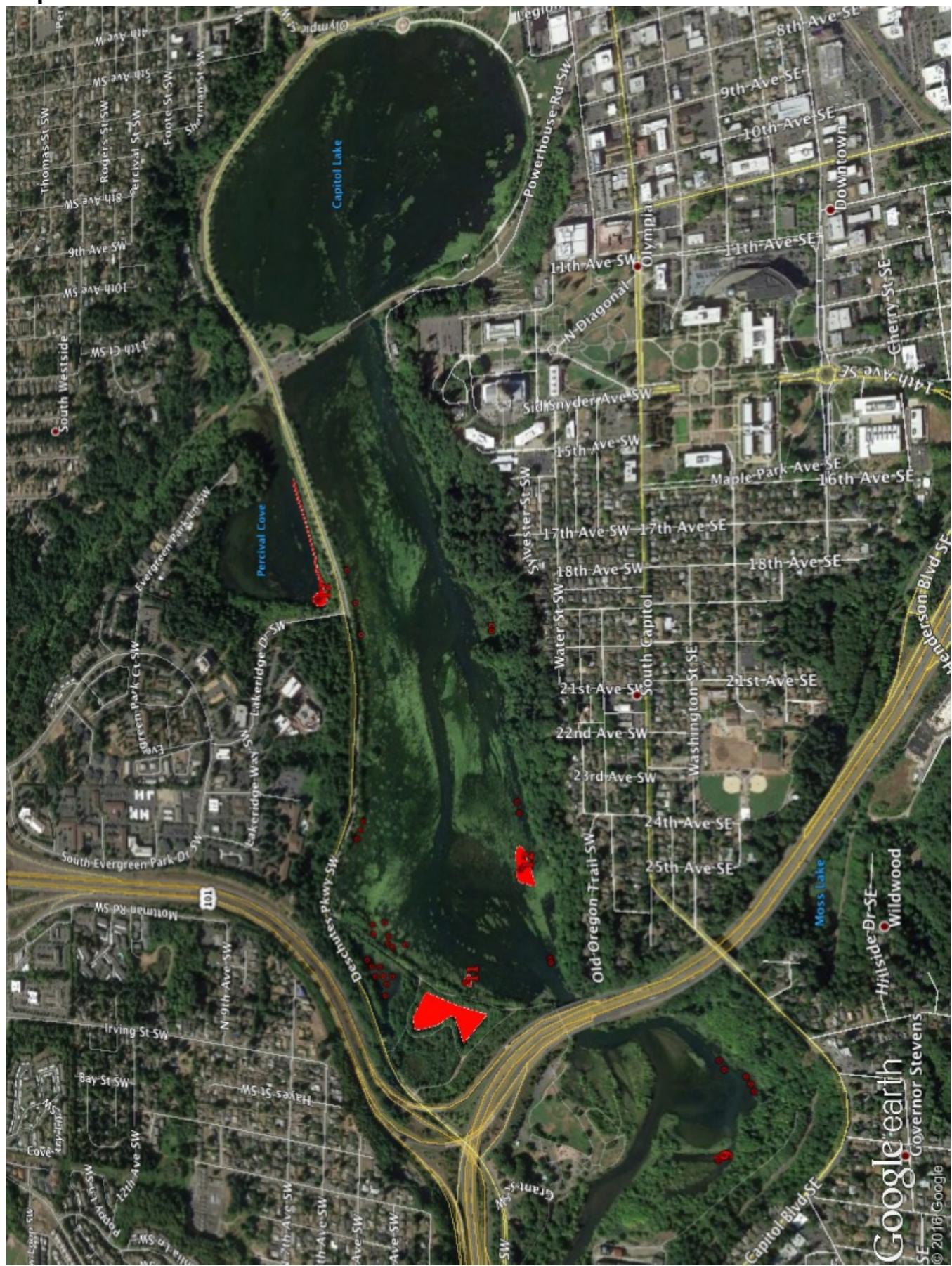
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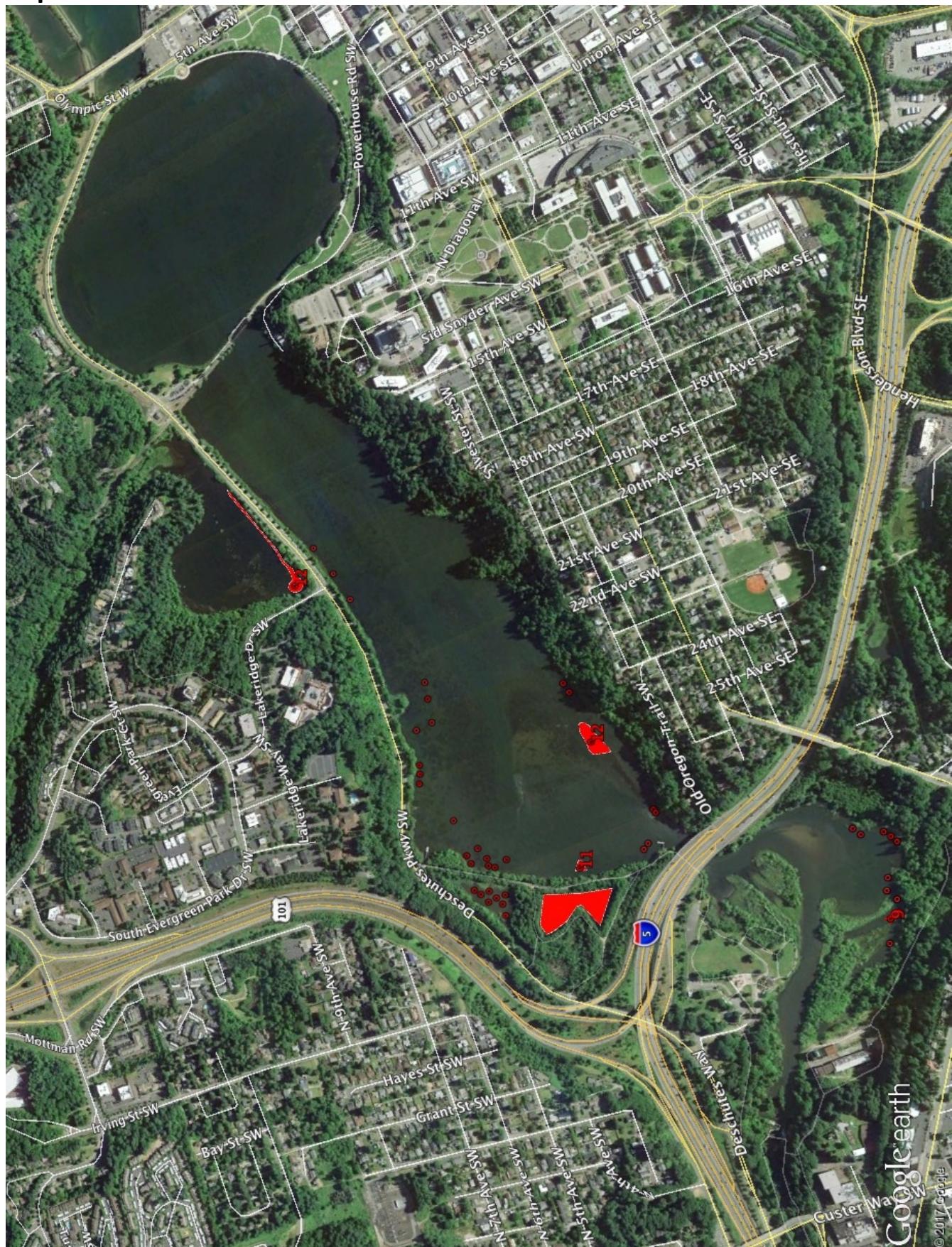
Capitol Lake 2015 – Eurasian Milfoil Infestation



Capitol Lake 2016 – Eurasian Milfoil Infestation



Capitol Lake 2017 – Eurasian Milfoil Infestation



Assessment

During the multipurpose surveys, Eurasian Milfoil sites were visited in the order listed below and were determined by previous maps created for Washington State Department of General Administration.

1. Sites indicating populations of multiple Eurasian Watermilfoil plants.
2. Sites indicating single Eurasian Watermilfoil plants.
3. Sites indicating no Eurasian Watermilfoil plants.

Conditions

Dense populations of Thin-Leaved Pondweed (*Potamogeton nodosus*) have spread each year from where they were traditionally found in the north basin into the north end of the middle basin. Thin-Leaved Pondweed (*Potamogeton nodosus*) is a native plant, which grows into dense colonies forming what looks like a mat on the lakes surface. The population was observed on both sides of the deeper river channel extending several hundred yards south of the pedestrian bridge separating the North and Middle Basins.

Eurasian Watermilfoil plants were found in depth ranges from 1 to 4 feet.

The quantity of milfoil plants has increased in 2017. The presence of filamentous algae on the water's surface has shown an increase. This has continued to interfere with the survey quality of Eurasian Water Milfoil, especially in the late season. While our mapping does not show an abundance of confirmed sightings, this cannot be held to be accurate. Our estimations are the population is much more present than has yet to be surveyed due to surface conditions. Our assessment is based on the trending climate, habitat and the possible correlation of dead fingerlings caused by lower dissolved oxygen and an ecosystem with less food sources for the surrounding fish which is an environment created in densely populated milfoil/aquatic vegetation areas.

Results

In 2013 there were 6 Eurasian Watermilfoil plants found. This does not include the Percival Cove pond; which Department of Enterprise Services has been contracting with divers to control Eurasian Watermilfoil in this area. The above practices will continue to combat the spread of the Eurasian Watermilfoil.

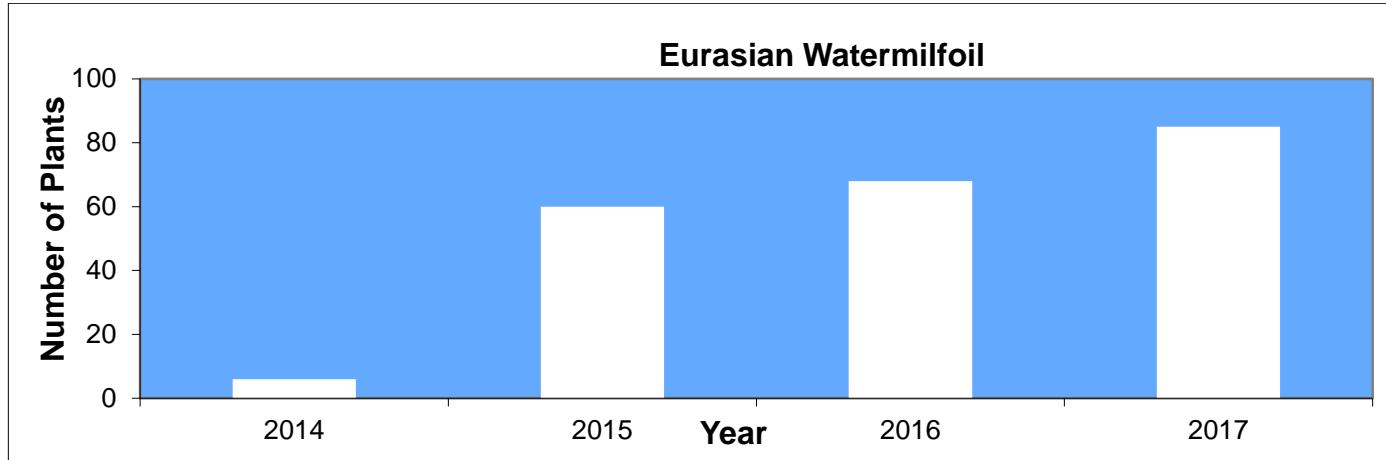
In 2014 there were also 6 Eurasian Watermilfoil plants found. The factors listed above seem to continue to keep the population from expanding. Percival Cove continues to support a large population but its' spread has not been observed.

In 2015 there was a dramatic increase in Eurasian Watermilfoil plants found. There were 12 plants found in the South Basin of Capitol Lake, there were 36 plants found in the Middle Basin of Capitol Lake, and there were about 12 plants found in Percival Cove. The west mitigation pond had about 8 plants in it while the east mitigation pond is relatively full of milfoil.

In 2016 there was a slight increase in Eurasian Watermilfoil plants found. There were 14 plants found in the South Basin of Capitol Lake, there were 42 plants found in the Middle Basin of Capitol Lake, and there were about 12 plants found in Percival Cove. The west mitigation pond had about 8 plants in it while the

east mitigation pond is relatively full of milfoil. The Department of Enterprise Services did not contract divers in 2016. Their use in 2017 would be beneficial.

In 2017 there was again an increase in Eurasian Watermilfoil. There were 18 plants found in the South Basin, there were 52 plants observed in the Middle Basin, and there were 15 plants found in Percival Cove. The west mitigation pond had about 12 plants in it while the east mitigation pond is relatively full of milfoil.



Control Activities

The survey work that was performed for Eurasian Milfoil was done in a 14' aluminum Jon boat powered by a 3.5 HP Tohatsu four stroke. This boat is dedicated 100% to the Capitol Lake Noxious Weed Project due to the infestation of the New Zealand Mud Snails. Precautions have been made with Washington Department Fish and Wildlife for decontamination procedures.

Instrumentation for this project included:

- Garmin 498 Chart plotter sonar
- Maps generated by Google Earth Pro

For 2015, plants in the Middle basins were only observed very late in the season. Areas traditionally surveyed are now so shallow that they did not support Eurasian Watermilfoil and were not conducive to surveys.

For 2016, the plants in the South Basin were observed throughout the season. The Middle basin had plants that were located in the deeper portions of the basin and where it has not built up too much sediment. Most of these plants are located at or near the outfall of the east mitigation pond. Percival Cove has plants along the East shoreline. Milfoil plants that were conducive to hand pulling were hand pulled. As the season went on the algae made surveys and control activities much more difficult to perform.

For 2017, the plants in the South Basin were observed throughout the entire season. The Middle Basin had shown the plants to be located in the deeper portions along the western shoreline. This extends from the outfall of the east mitigation pond heading northward toward Marathon Park. Dr. David Milne also spotted two plants off the dock at the southwest corner of the Middle Basin, right near the Interstate 5 overpass. Percival cove surveys showed plants along the eastern shoreline. All Milfoil plants that were

conducive to hand pulling we removed. As the season progressed, the abundance of surface algae made survey and control activities increasingly difficult.

2017 also allowed for screen replacement to help reduce milfoil spread from the mitigation ponds. Water levels in the lake were temporarily lowered for 3 days allowing us access. Originally the contract budgeted for replacement of just the fine mesh screens. After assessment with lowered water levels we were able to conclude that more structural components needed to be replaced. The fine mesh screen above the water line was still in perfect working order. However, the lower half of the screens and much of the chain link fencing along with some of the underwater structuring had rotted. This was not in budget but understanding what the end goal results that were needed and the short amount of time with lowered water levels our action plan was adjusted accordingly. This did exceed our agreed budget by several hundred dollars but we were happy with the results.

A meeting onsite with Brent Chapman revealed that the water levels had been raised higher and then back to normal since repair. Giving the impression none of the screens had been replaced due to sediment and debris present high up on the fine mesh screens. After detailed explanation he understood and we agreed that in future situations we will document our findings and alterations and send a mini report. Making it universally understood the measures and adjustments that were made to reach our mutual goal. We believe our assessment of the rest of the structuring shows it will need full replacement of all posts within 3-4 years. Annually we will continue to assess and report the quality and condition as needed.

Surveys were conducted in conjunction with Yellow Flag Iris and Purple Loosestrife surveys and treatments.

Proposed Management

As of right now, management of Eurasian Watermilfoil for the 2018 season closely resembles the same method used in the 2017 season. Less emphasis will be placed on the pre-season survey allowing more time for surveys later in the season as the plants grow in size and are more identifiable.

However, Eurasian Milfoil survey work needs to be expanded due to the amount of plants found in 2017. Previous control methods that were used, including surveys, marking, and managing could be replicated. If survey work is implemented, milfoil plants could be marked for easy identification. After the plants are identified, a small dredge could be implemented to suck up and dispose of the plants. Another option if survey work is implemented, would be to lower the lake level that would be conducive to hand pulling some of the new Eurasian Milfoil plants.

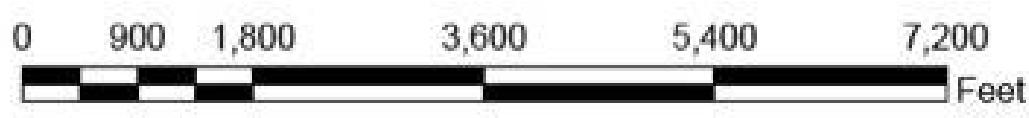
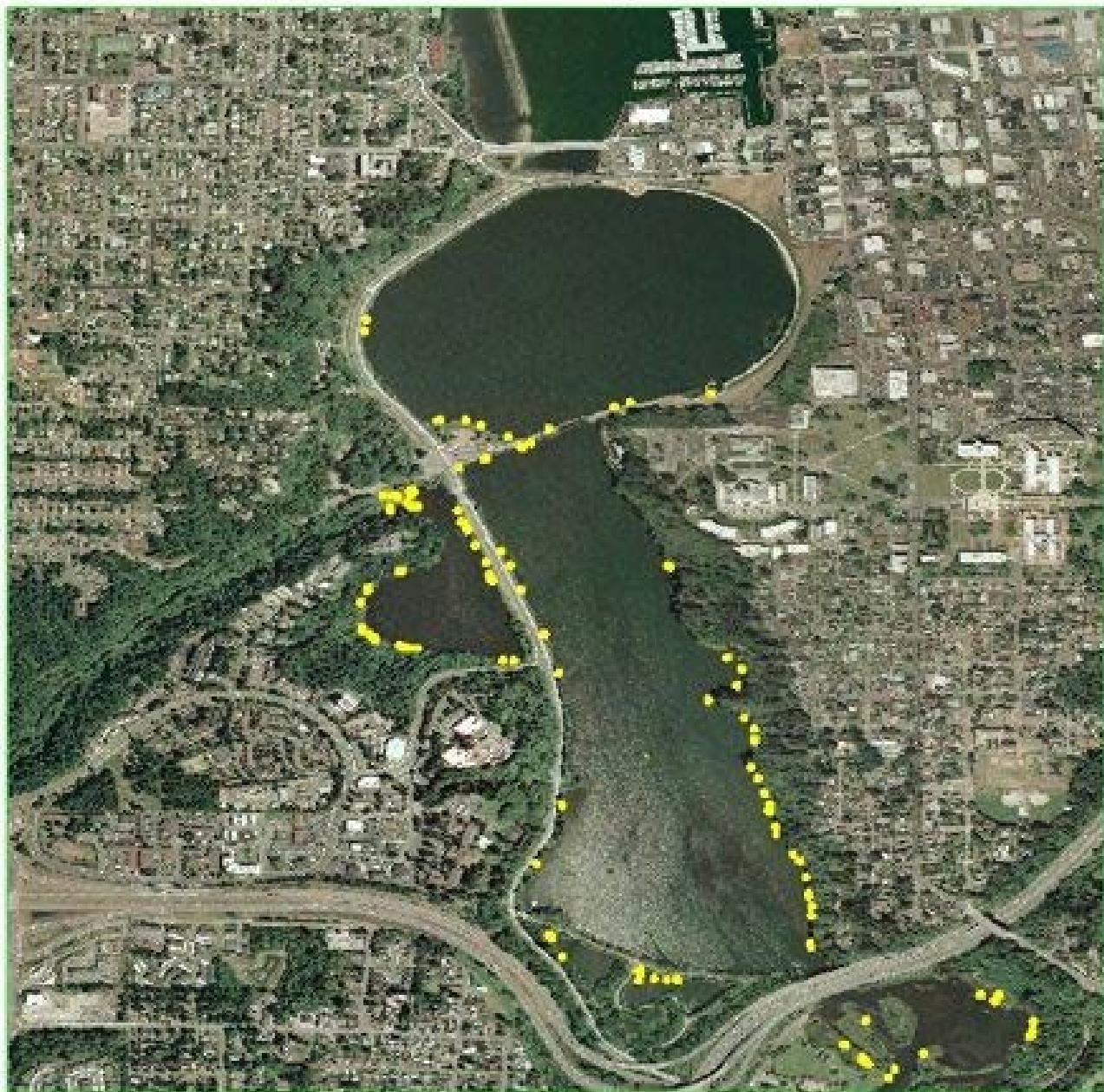
As we already know Eurasian watermilfoil is very dangerous because it spreads and invades fast. Our current system is surveying, documenting and treating if possible. If the plant is able to be hand pulled, then it will be pulled.

Yellow Flag Iris (*Iris pseudacorus*)



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Capitol Lake 2013 Yellow Flag Iris Survey





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Capitol Lake 2014 Yellow Flag Iris Infestation



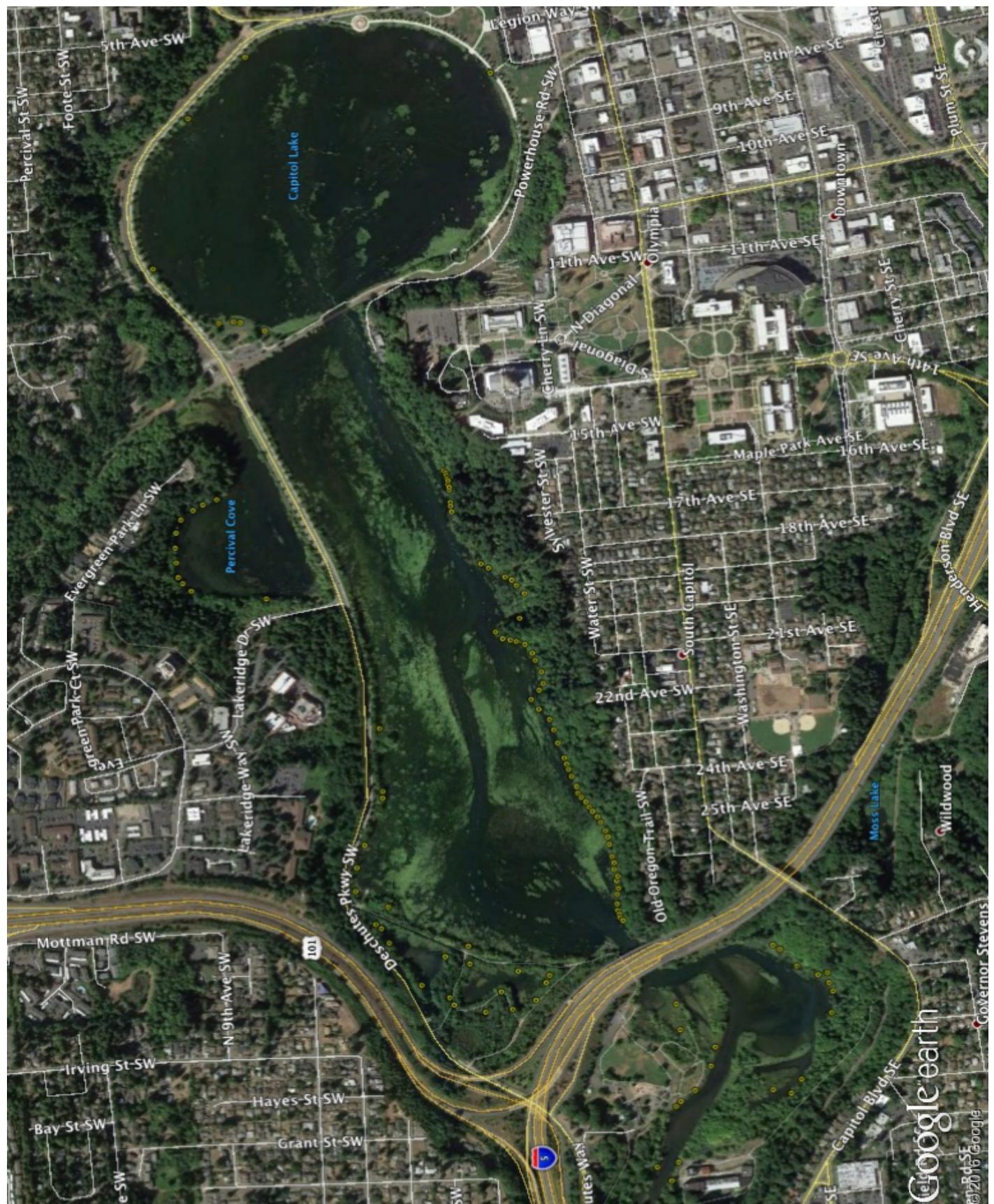
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Feet



Capitol Lake 2015 – Yellow Flag Iris Infestation



Capitol Lake 2016 – Yellow Flag Iris Infestation



Capitol Lake 2017 – Yellow Flag Iris Infestation



Assessment

Yellow flag Iris plants were distributed along all shorelines of the lake and in many wetland areas. When not in bloom, Yellow Flag Iris looks similar to cattails and other reeds making the timing of the survey important. The Yellow Flag Iris presents itself quite well and is easily seen when in bloom.

Yellow Flag Iris spreads by both seeds, which grow in pods, or by rhizomes that grow just above the roots.

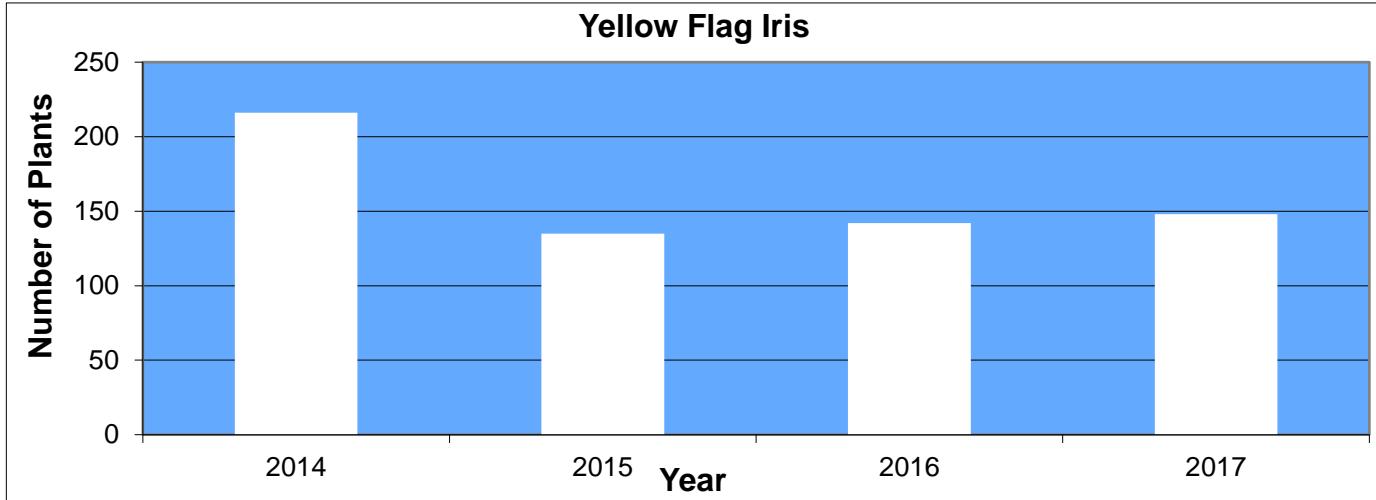


*Yellow Flag Iris in late bloom stage with a Crab Spider (*Misumena vatia*)*

In comparison to 2014, 2015 demonstrated a decrease in plant count on Department of Enterprise Service property. A total of 135 plants were found on the property, while the number of plants found on private property was quite high with 453 plants. The drop-in plant numbers could be attributed to unusual season activity in the past few years; earlier spring and a shorter growing season.

2016 demonstrated a very slight increase in plant count on Department of Enterprise Service property. A total of 142 plants were found on the property, while the number of plants found on private property was quite high with 445 plants.

2017 stayed relatively steady for plant numbers on Department of Enterprise Service property. A total of 148 plants were found on the property. The plants found on private property were at 440 for 2017.



Control Activities

Yellow Flag Iris plants were located, documented, and plotted. Plants with developed seed heads/pods were removed and the seed heads/pods were double bagged and disposed of in the County landfill. All plants, no matter seed head development or not, were then treated with a solution of 1.5% Nufarm Polaris (Imazapyr), 0.5% Wilbur-Ellis Competitor Adjuvant and blue die; Plant die off was seen in one to two weeks.

All areas on the map indicating plant presence were treated with the exception of the east shoreline between the I-5 Bridge and the power plant. These plants were on residential parcels. At these sites, the plants were inventoried and seed heads/pods were removed and double bagged to help prevent further spreading.

WSDA Letter of Limited Agent Status - Appendix A

A *Letter of Limited Agent Status* was acquired from the WSDA for this activity and all public notification requirements were met.

Proposed Management

Management of Yellow Flag Iris for the 2018 season should continue with the same general strategies as in 2017, assuming the initial assessment finds similar conditions. The chemical change to an Imazapyr product with blue die should continue in 2018.

If in that assessment, bare areas are observed as a result of repeated treatments a program to re-vegetate these locations with native seeding should be considered.

More aggressive action could be taken to eradicate the plants that were not in the 2017 treatment area. The most effective and economical option would be to obtain permission from the homeowners and conduct an herbicide application.

Spray Logs Appendix B*

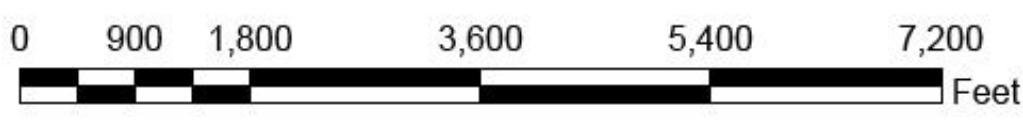
* - Some Application Records have both Yellow Flag Iris and Purple Loosestrife

Purple Loosestrife (*Lythrum salicaria*)



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Capitol Lake 2013 Purple Loosestrife Survey





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Capitol Lake

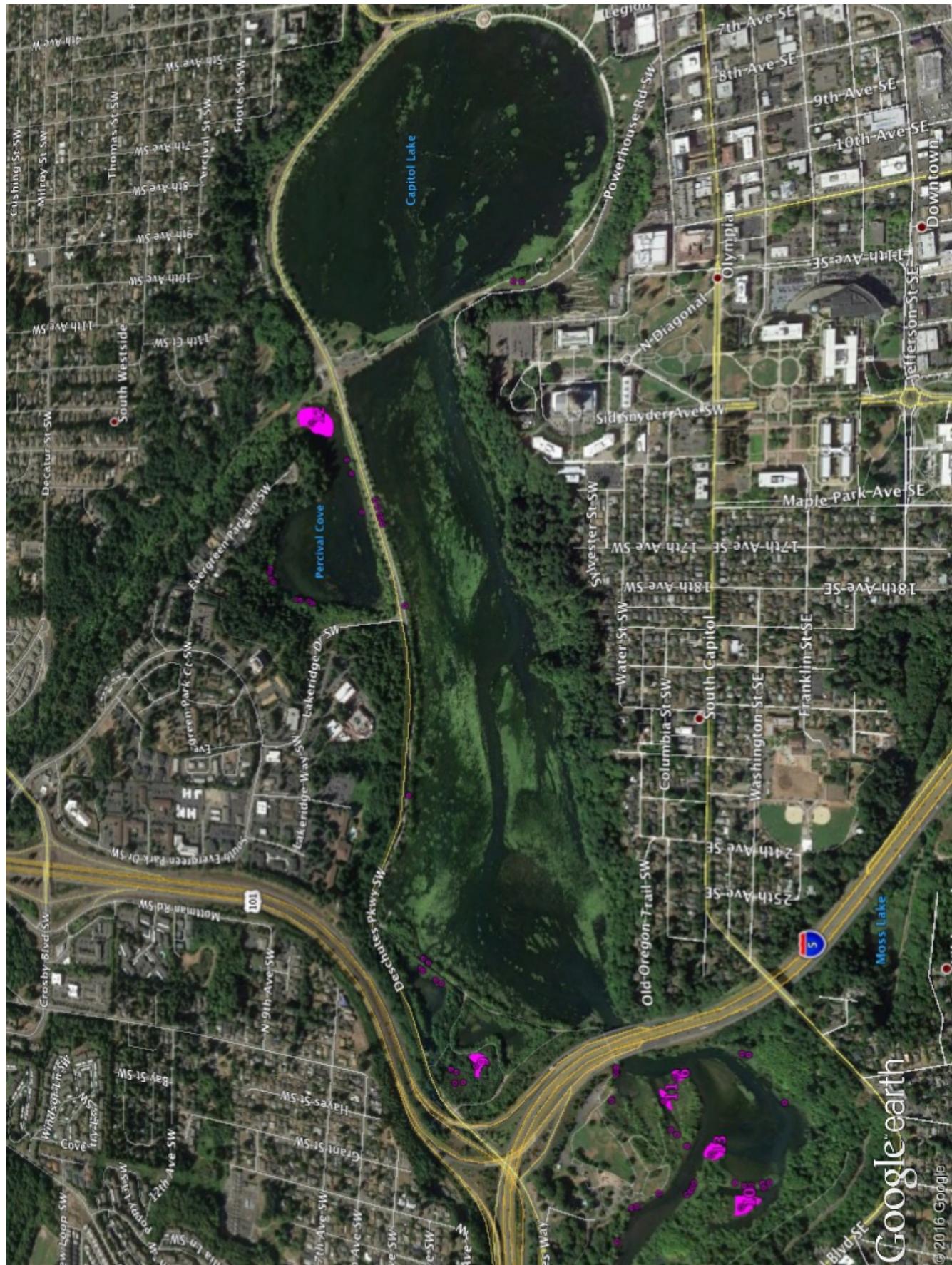
2014 Purple Loosestrife Infestation



Capitol Lake 2015 – Purple Loosestrife Infestation



Capitol Lake 2016 – Purple Loosestrife Infestation



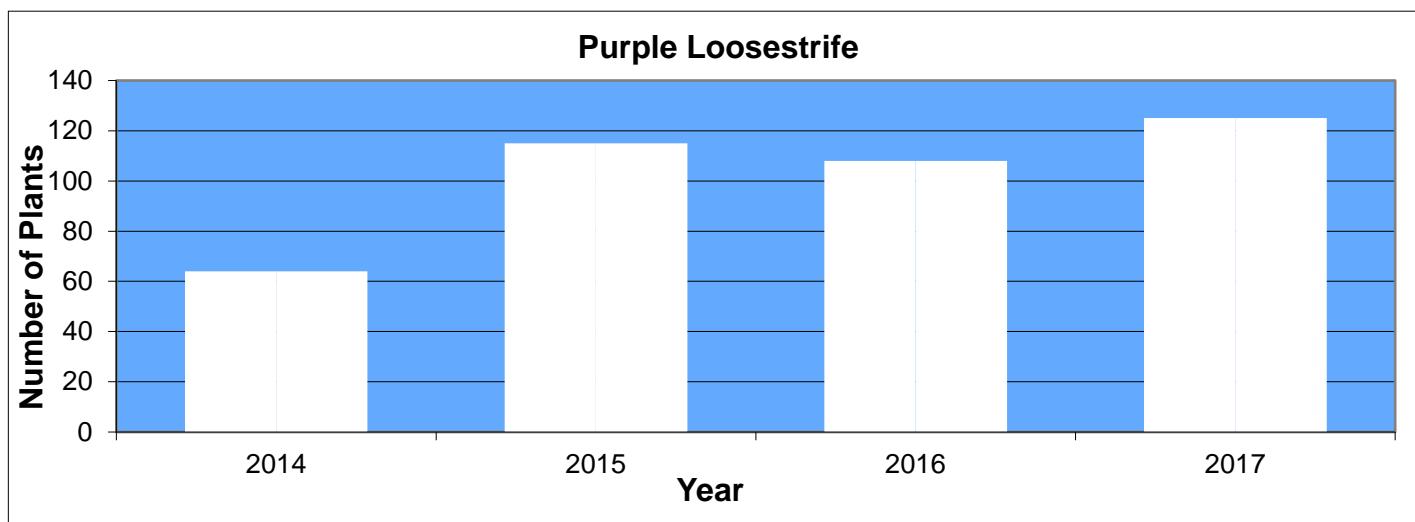
Capitol Lake 2017 – Purple Loosestrife Infestation



Assessment

Purple Loosestrife is most easily identified while it is in bloom. Purple Loosestrife stays in bloom much longer than Yellow Flag Iris and spreads much more aggressively.

In 2017, the number of Purple Loosestrife plants found on DES property showed a very slight increase from 2016 (from 115 to 125). Plants found were distributed along most shoreline and in most wetlands around Capitol Lake. Majority of plants treated were found in previously existing infestation areas. With Purple Loosestrife seeds being very small and have been estimated to lay dormant for many years, these smaller plants were believed to be new growth. With optimal weather and soil conditions creating opportunity for them to germinate.



Control Activities

Purple Loosestrife plants were located, documented, and plotted. Plants that had developed seed heads were topped and the seed heads were double bagged and disposed of in the County landfill. All plants were then treated with a solution of 1.5% Nufarm Polaris (Imazapyr), 0.5% Wilbur-Ellis Competitor Adjuvant and blue die. Plant die off was seen in one to two weeks.

In past years, some plants had shown indications that the Black-margined Loosestrife beetles (*Galerucella californica*) were present. The beetles helped with control by specifically targeting Loosestrife plants. As with many biological controls, with the decrease in plant populations the Black-margined Loosestrife beetles' activity is not noticeable again in 2017.

Proposed Management

2018's management plan for Purple Loosestrife will stay consistent with our goals and strategy from 2017. We would like to implement the use of technology such as a drone to assist in surveying of heavy and dense brush areas that are difficult to access. This will allow a better assessment, save time and decrease our footprint in the wetland areas. The decision to change chemical to an Imazapyr product with a blue dye should continue into 2018.

Spray Logs Appendix C*

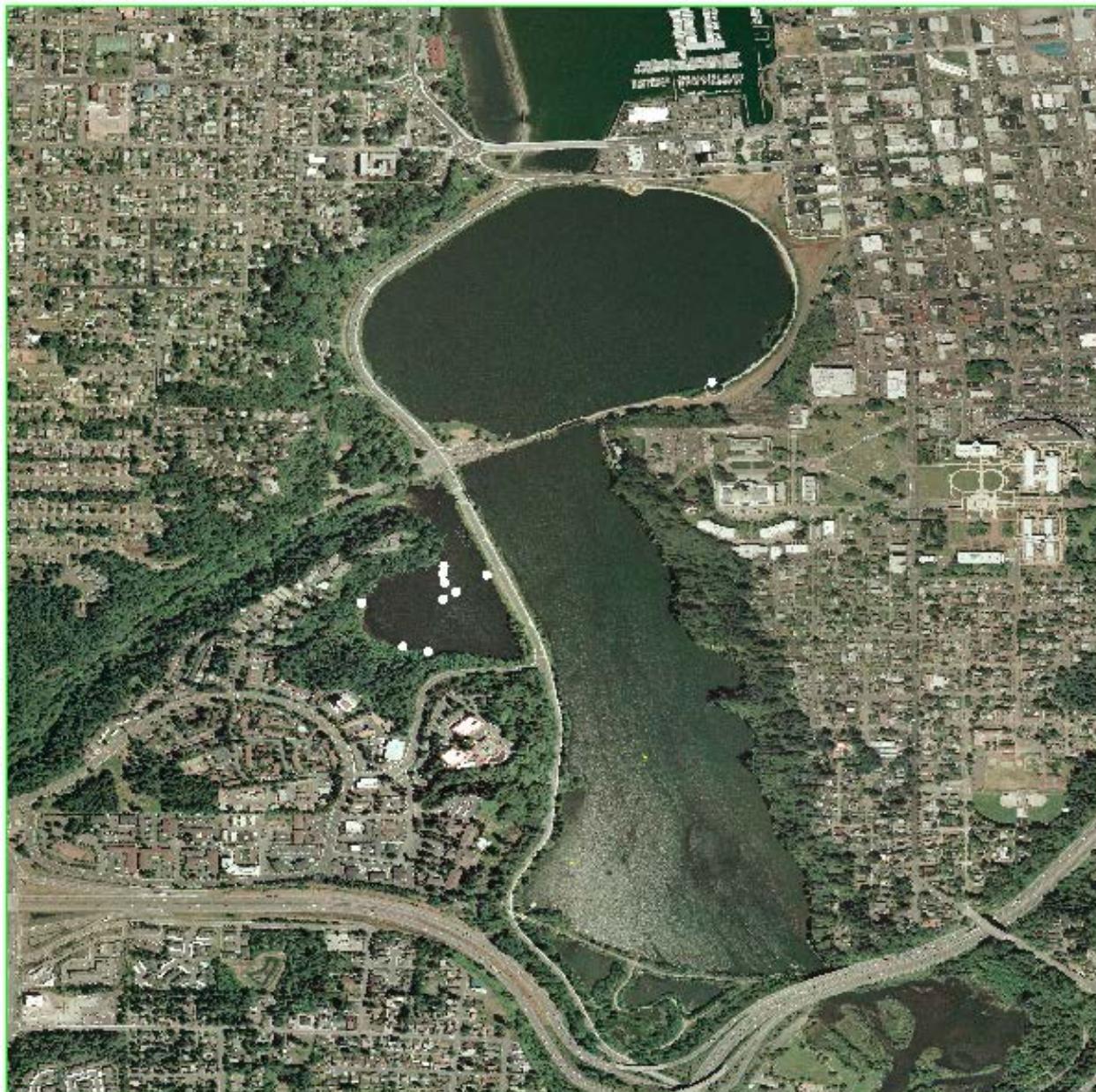
* - Some Application Records have both Yellow Flag Iris and Purple Loosestrife

Fragrant White-Water Lily (*Nymphaea odorata*)



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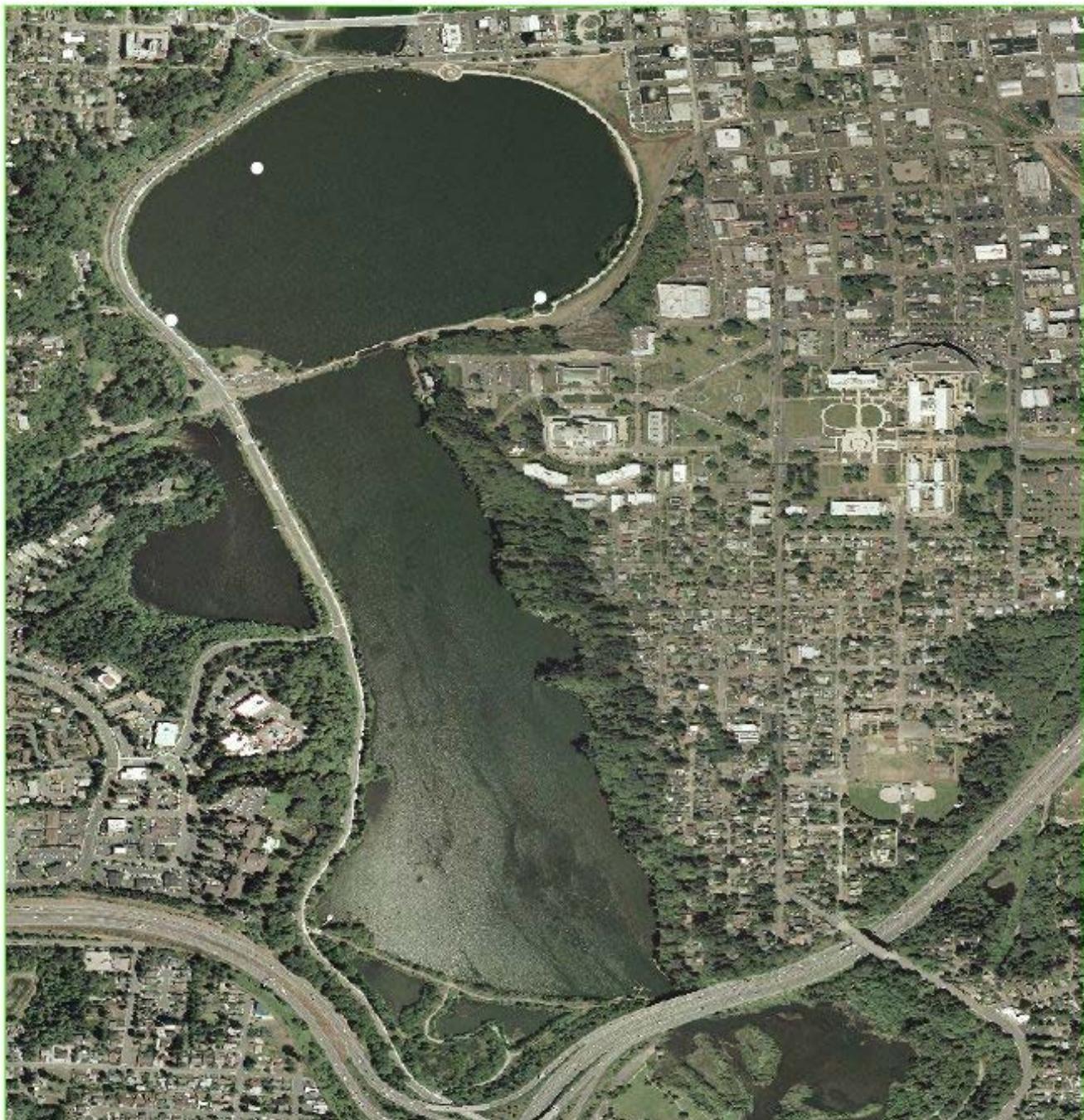
Capitol Lake 2013 Fragrant White Water Lily Survey





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(360) 481-8479
NWAQUA.COM

Capitol Lake 2014 Fragrant White Water Lily Infestation



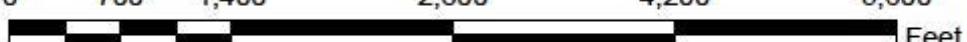
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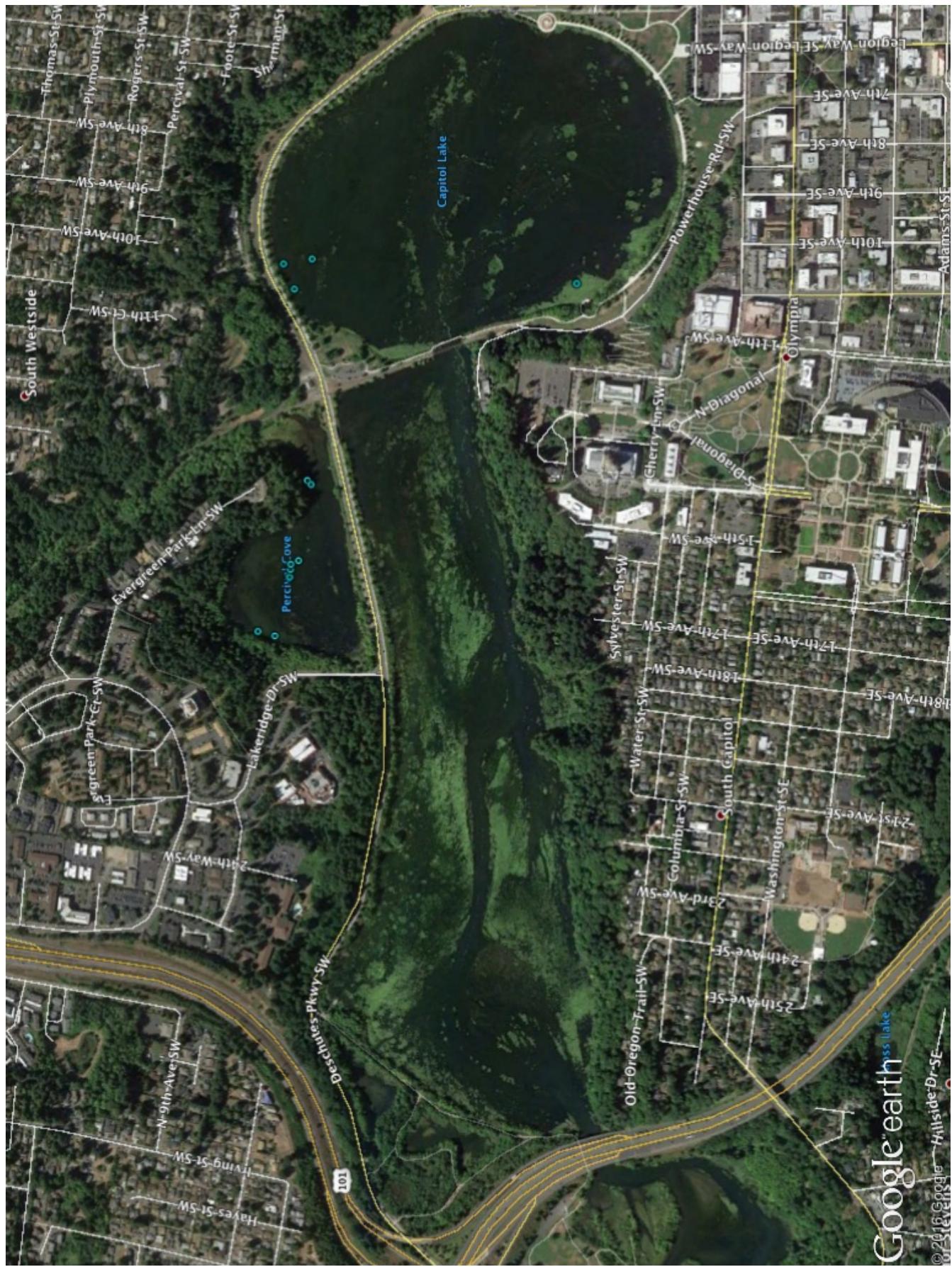
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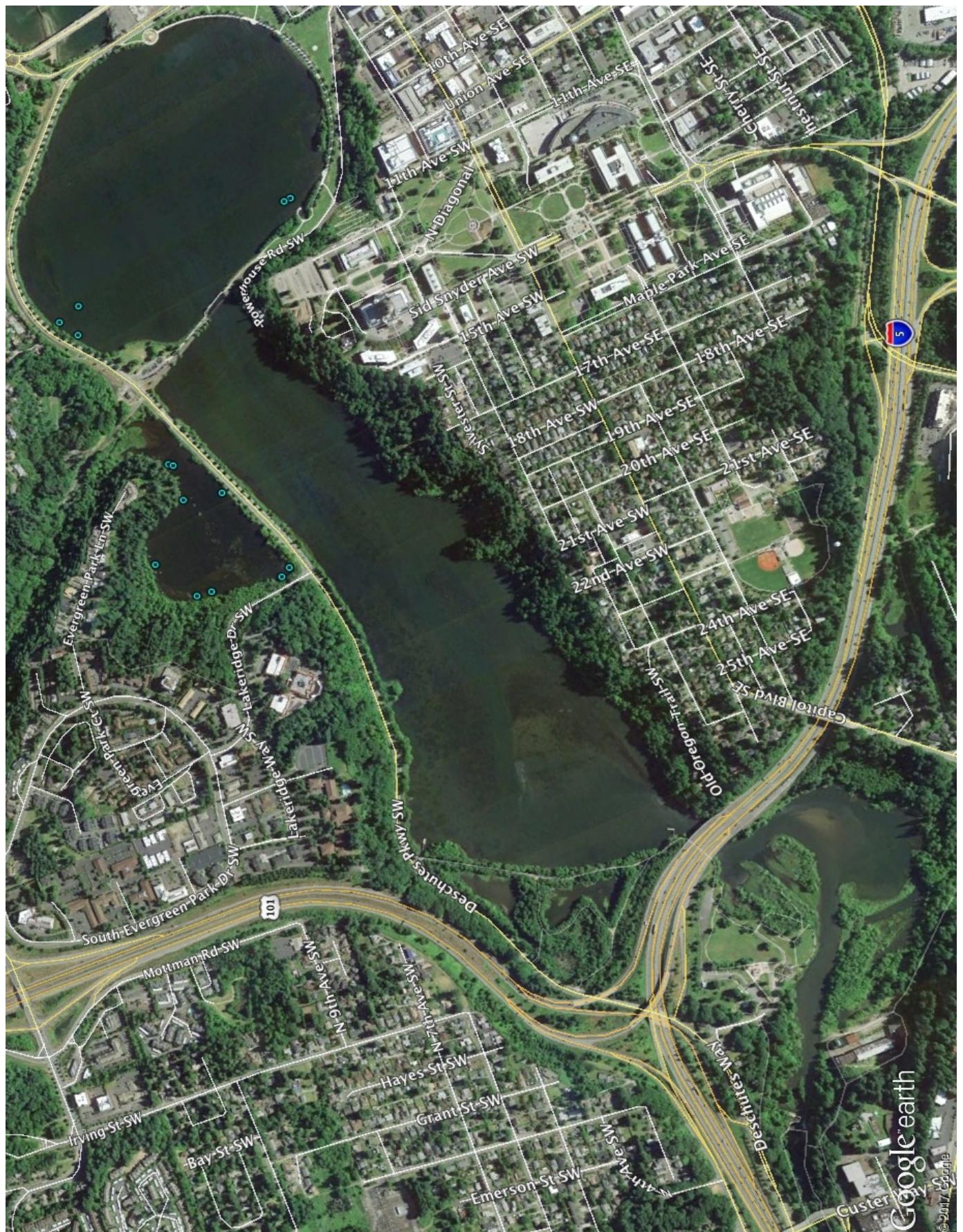
Capitol Lake - 2015 Fragrant White-Water Lily Infestation



Capitol Lake - 2016 Fragrant White-Water Lily Infestation



Capitol Lake - 2017 Fragrant White-Water Lily Infestation



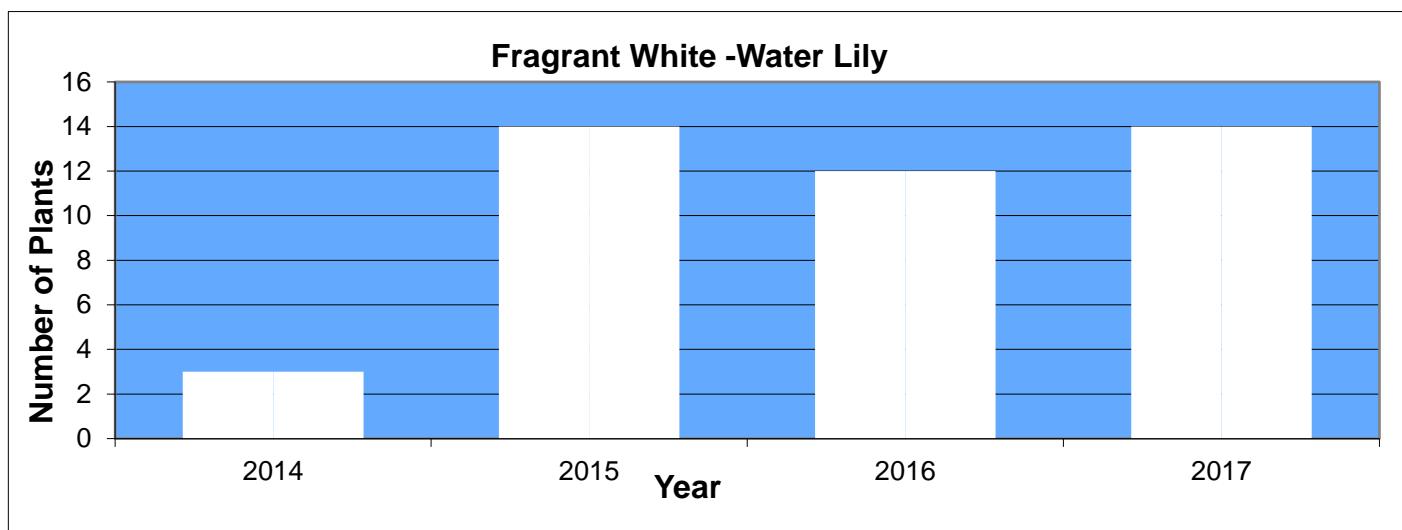
Assessment

In relative terms to other Western Washington Lakes this is considered a very small infestation. All locations except one group in Percival cove consisted of less than one dozen pads. White Water Lilies have the ability to spread across several acres forming a canopy over areas of the lake, blocking all sunlight from other plant life. This often leads to anaerobic conditions.

The 2015 survey of Fragrant White-Water Lilies resulted in the recording of 6 locations on Capitol Lake and 8 locations in Percival Cove. The pads on Capitol Lake are consistent with the same locations as in 2014 survey.

The 2016 survey of Fragrant White-Water Lilies resulted in the recording of 4 locations on Capitol Lake and 8 locations in Percival Cove. The pads on Capitol Lake have declined from 2015. The pads on Percival Cove are consistent with the locations as in 2015 survey.

The 2017 seasons survey of Fragrant White-Water Lilies resulted in the recording of 5 locations on Capitol Lake and 9 locations found in Percival Cove. The pads on Capital Lake and Percival Cove have stayed neutral and consistent from our surveys of the 2016 season.



Control Activities

Fragrant White-Water Lilies were cut three times during the summer to control their growth.

Proposed Management

Continued cutting to achieve carbohydrate depletion over multiple seasons will result in the reduction of the Fragrant White-Water Lilies.

Japanese Knotweed (*Fallopia japonica*)

Assessment

Japanese Knotweed is a Class B noxious weed, which should be controlled to prevent its spread.

The 2017 survey observed no new infestations. The property south of Historical Park has a quite large infestation. Northwest Aquatic Management has been in contact with Thurston County and nothing has been done at this time.

Control Activities

The Thurston County Noxious Weed Board and the City of Tumwater should both be regularly notified of the issue.

Proposed Management

As discussed, any Japanese Knotweed infestation found on DES property will be controlled accordingly. This noxious weed is most commonly controlled by stem injection with Glyphosate. Utilizing this effective management strategy requires special equipment and is found to be time consuming. Alternatively, a spray solution of 2% Glyphosate, 1% Imazapyr and a foliar application between the months of mid-July to mid-September has proven to also be very effective. Tim Wilson, from Thurston County Noxious Weeds, has also recommended a straight 2% spray solution of Imazapyr for treatment of Japanese Knotweed.

Further inquiry should be made to assure there is a work program in affect to control the surrounding infestations.

Attachments

Appendix A – WSDA Letter of Limited Agent Status



STATE OF WASHINGTON

DEPARTMENT OF AGRICULTURE

PLANT PROTECTION DIVISION

P.O. Box 42560 • Olympia, Washington 98504-2560 • Phone (360) 902-1908 • Fax (360) 902-2094

LETTER of LIMITED AGENT STATUS

February 21, 2017

I. ENTITY WITH LIMITED AGENT STATUS

Name of Entity:	Northwest Aquatic Management, LLC		
Name:	Kyle Steelhammer		
Mailing Address:	9727 Hwy 12 W #815		
City:	Rochester	State:	WA
ZIP + 4:	98579		
E-Mail Address:	kyle@nwaqua.com		
Daytime Phone:	360-870-4362	Cell Phone:	

II. WATERBODY AND HERBICIDE INFORMATION

Waterbody Name	County	WRIA	Target Weed	Herbicide
Capitol Lake	Thurston	13 - Deschutes	Purple Loosestrife, Yellow Flag Iris	Glyphosate
Capitol Lake	Thurston	13 - Deschutes	Purple Loosestrife, Yellow Flag Iris	Imazapyr

Dear Applicant:

This Letter of Limited Agent Status constitutes a formal acceptance by the Washington State Department of Agriculture (WSDA) of the “Application and Agreement for Limited Agent Status for Aquatic Noxious Weed Control under WSDA’s National Pollutant Discharge Elimination System General Permit” (hereinafter, “Application for Limited Agent Status”) submitted by the above-named entity.

As set forth in the Application for Limited Agent Status and agreed to in this Letter of Limited Agent Status, WSDA hereby enters into a contract with the above-named entity (Section I), under which the entity acts as a limited agent to carry out noxious emergent and quarantine weed control for WSDA under the “Aquatic Noxious Weed Management General Permit National Pollutant Discharge Elimination System Waste Discharge General Permit” (hereinafter, “Permit”) issued to WSDA on February 3, 2017.

This limited agent status applies to only the noxious weed control and/or eradication activities described in the Application for Limited Agent Status (Section II). This limited agent status

covers only treatments conducted by the above-named entity and treatments conducted under contract on behalf of the above-named entity. This coverage terminates December 31, 2017. Direct in-water treatment of aquatic weeds is not allowed under this agreement.

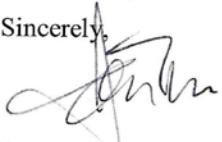
The above-named entity agrees to comply with all terms, conditions, and requirements included or referenced in the Application for Limited Agent Status, Permit and appropriate state, federal and local laws. WSDA issues this Letter of Limited Agent Status in specific reliance on the representations and agreements made by the entity in the Application for Limited Agent Status and WSDA intends that the entity comply with all terms, conditions, and requirements included or referenced in the Application for Limited Agent Status and the Permit.

Further information and the Permit language can be found at the following URL.

http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/noxious/noxious_index.html

If any notification to WSDA is required under the Application for Limited Agent Status, that notification must be made to James Marra at (360) 902-2071 or jmarra@agr.wa.gov.

Sincerely,



James Marra, Ph.D.
Pest Program Manager

Appendix B – Yellow Flag Iris*



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555

A. Date of Application - Year: 2017 Month: 06 Day: 07

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle

License No(s): 80509

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
Aquamaster(Glyphosate)	000524-00343	12.5 Quarts/100 Gallons
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	2 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	6 Quarts / 100 Gallons
Competitor	2935-04001	2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake	1 Gal	Spot Treatment	7:00	64	SSW	4
b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Yellow Flag Iris	3:30			
2. a) Department of Enterprise Services, Capitol Lake		Spot Treatment				
b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Purple Loosestrife				
3. a)						
b)						
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 06 Day: 14

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle

License No(s): 80509

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration
Aquamaster(Glyphosate)	000524-00343	Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	12.5 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	2 Quarts/100 Gallons
Competitor	2935-04001	6 Quarts / 100 Gallons
		2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	1 Gal	Spot Treatment Yellow Flag Iris	7:00	55	SW	5
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment Purple Loosestrife	5:30			
3. a)						
b)						
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						

AGR FORM 640-4234 (R/4/07)

* - Some Application Records have both Yellow Flag Iris and Purple Loosestrife

Appendix C – Purple Loosestrife*



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555

A. Date of Application - Year: 2017 Month: July Day: 31

B. Firm Name: NW Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 West #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration Amount (Lbs, Qts, etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
Aquamaster(Glyphosate)	000524-00343	12.5 Quarts/100 Gallons
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	2 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	6 Quarts / 100 Gallons
Competitor	2935-04001	2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) General Administration, Capitol Lake		Spot Treatment				
b) 210 11 th Ave SW GA Bldg, Rm 201 Olympia, WA 98504		Yellow Flag Iris				
2. a) General Administration, Capitol Lake		Spot Treatment	3:30	77	N/A	Nil
b) 210 11 th Ave SW GA Bldg, Rm 201 Olympia, WA 98504	.75	Purple Loosestrife	7:00			
3. a)						
b)						
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 08 Day: 09

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration
Aquamaster(Glyphosate)	000524-00343	Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	12.5 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	2 Quarts/100 Gallons
Competitor	2935-04001	6 Quarts / 100 Gallons
		2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	WIND VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment				
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	1.5 Gal	Yellow Flag Iris				
3. a)		Spot Treatment	2:00	86	WN W	5
b)		Purple Loosestrife				
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 08 Day: 15

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration
Aquamaster(Glyphosate)	000524-00343	Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	12.5 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	2 Quarts/100 Gallons
Competitor	2935-04001	6 Quarts / 100 Gallons
		2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment				
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	.5 Gal	Yellow Flag Iris	12:00	80	SE	3
3. a)		Spot Treatment				
b)		Purple Loosestrife	7:00			
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 08 Day: 19

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration
Aquamaster(Glyphosate)	000524-00343	Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	12.5 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	2 Quarts/100 Gallons
Competitor	2935-04001	6 Quarts / 100 Gallons
		2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment				
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	.25 Gal	Yellow Flag Iris	12:00	72	S	3
3. a)		Spot Treatment				
b)		Purple Loosestrife	1:30			
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 08 Day: 22

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
Aquamaster(Glyphosate)	000524-00343	12.5 Quarts/100 Gallons
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	2 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	6 Quarts / 100 Gallons
Competitor	2935-04001	2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment Yellow Flag Iris				
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	.5 Gal	Spot Treatment Purple Loosestrife	12:00	84	SSW	4
3. a)						
b)						
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 08 Day: 29

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
Aquamaster(Glyphosate)	000524-00343	12.5 Quarts/100 Gallons
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	2 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	6 Quarts / 100 Gallons
Competitor	2935-04001	2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment Yellow Flag Iris				
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	1 Gal	Spot Treatment Purple Loosestrife	12:00	85	SW	4
3. a)						
b)						
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 08 Day: 30

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration
Aquamaster(Glyphosate)	000524-00343	Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	12.5 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	2 Quarts/100 Gallons
Competitor	2935-04001	6 Quarts / 100 Gallons
		2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Spot Treatment				
2. a) Department of Enterprise Services, Capitol Lake b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480	1 Gal	Yellow Flag Iris	12:30	75	SW	6
3. a)		Spot Treatment				
b)		Purple Loosestrife	5:30			
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						



PESTICIDE APPLICATION RECORD (Version 4)

NOTE: This form must be completed same day as the application
and it must be retained for 7 years (Ref. chapter 17.21 RCW)

**Washington State Department of Agriculture
Pesticide Management Division
PO Box 42560
Olympia WA 98504-2560
(877) 301-4555**

A. Date of Application - Year: 2017 Month: 09 Day: 06

B. Firm Name: Northwest Aquatic Management LLC Telephone No.: (360) 870-4362

Commercial Applicator's Name: Kyle Steelhammer License No.: 90015

Street Address: 9727 Hwy 12 W #815 City: Rochester State: WA Zip: 98579

C. Name of person(s) who applied the pesticide: Kyle Steelhammer

License No(s): 90015

D. Pesticide Information (list all information for each pesticide including spray adjuvants (buffer, surfactant, dye, etc.) in the tank mix):

Full Product Name	EPA Reg. No.	Concentration
Aquamaster(Glyphosate)	000524-00343	Amount (Lbs., Qts., etc.) of brand per 100 gallons of tank mix. Amount and unit must be specified.
LI 700—Phosphatidylcholine methylacetic acid and alkyl polyoxyethylene ether	034704-50035	12.5 Quarts/100 Gallons
Nufarm Polaris Herbicide (Imazapyr)	228-534	2 Quarts/100 Gallons
Competitor	2935-04001	6 Quarts / 100 Gallons
		2 Quarts / 100 Gallons

E. Application crop or site: Wetlands

F. Apparatus License Plate No. Backpack

G. Record the following information for the specific conditions during each application:

CUSTOMER (a) full name (b) complete address	AMOUNT APPLIED (gals. of mix)	AREA TREATED (sq. ft., etc.)	START & STOP TIME	TEMP F°	WIND DIR	WIND VEL (mph)
1. a) Department of Enterprise Services, Capitol Lake		Spot Treatment				
b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Yellow Flag Iris				
2. a) Department of Enterprise Services, Capitol Lake	.25 Gal	Spot Treatment	12:00	78	WS W	2
b) 1500 Jefferson Street SE, PO Box 41480, Olympia, WA 98504-1480		Purple Loosestrife	5:00			
3. a)						
b)						
4. a)						
b)						
5. a)						
b)						
6. a)						
b)						
7. a)						
b)						
8. a)						
b)						

AGR FORM 640-4234 (R/4/07)

* - Some Application Records have both Yellow Flag Iris and Purple Loosestrife