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Capitol Lake

Weed Management Services

2019 Annual Report

February 28, 2020

Northwest Aquatic Management, LLC

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

Prepared by:
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Contents

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 (*Egaria canadensis*)
- Coontail (*Ceratophyllum demersum*)
- Large-leaved Pondweed (*Potamogeton amplifolius*)
- Thin-Leaved Pondweed (*Potamogeton nodosus*)
- Curlyleaf Pondweed (*Potamogeton crispus*)
- White Stem Pondweed (*Potamogeton praelongus*)
- Brittlewort (*Nitella*)

Non-aquatic noxious weeds observed,

- Japanese Knotweed
- Tansy Ragwort
- Evergreen Blackberry
- Himalayan Blackberry

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:

- Deposition of sediments
- Infestation of New Zealand Mud Snails
- Increase in Eurasian Watermilfoil

Eurasian Watermilfoil (*Myriophyllum spicatum*)

Capitol Lake 2018 – Eurasian Milfoil Infestation

Assessment

No assessment was recorded for 2019 due to the oil spill that closed the access to the lake.

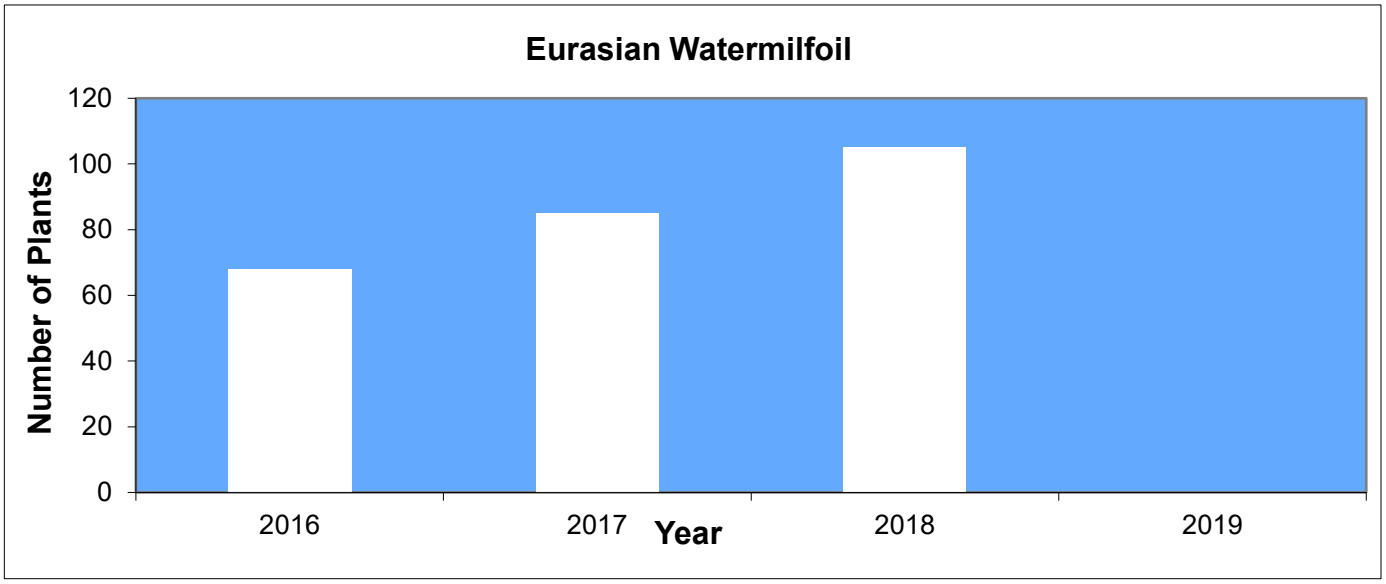
Conditions

We feel strongly that Eurasian Watermilfoil plants were still growing in depths ranging from 1 to 4 feet.

The shallowing areas are perfect growing conditions for this very aggressively spreading aquatic plant.

Results

No results were recorded for 2019 due to the oil spill that closed the access to the lake.



Control Activities

No control was recorded for 2019 due to the oil spill that closed the access to the lake.

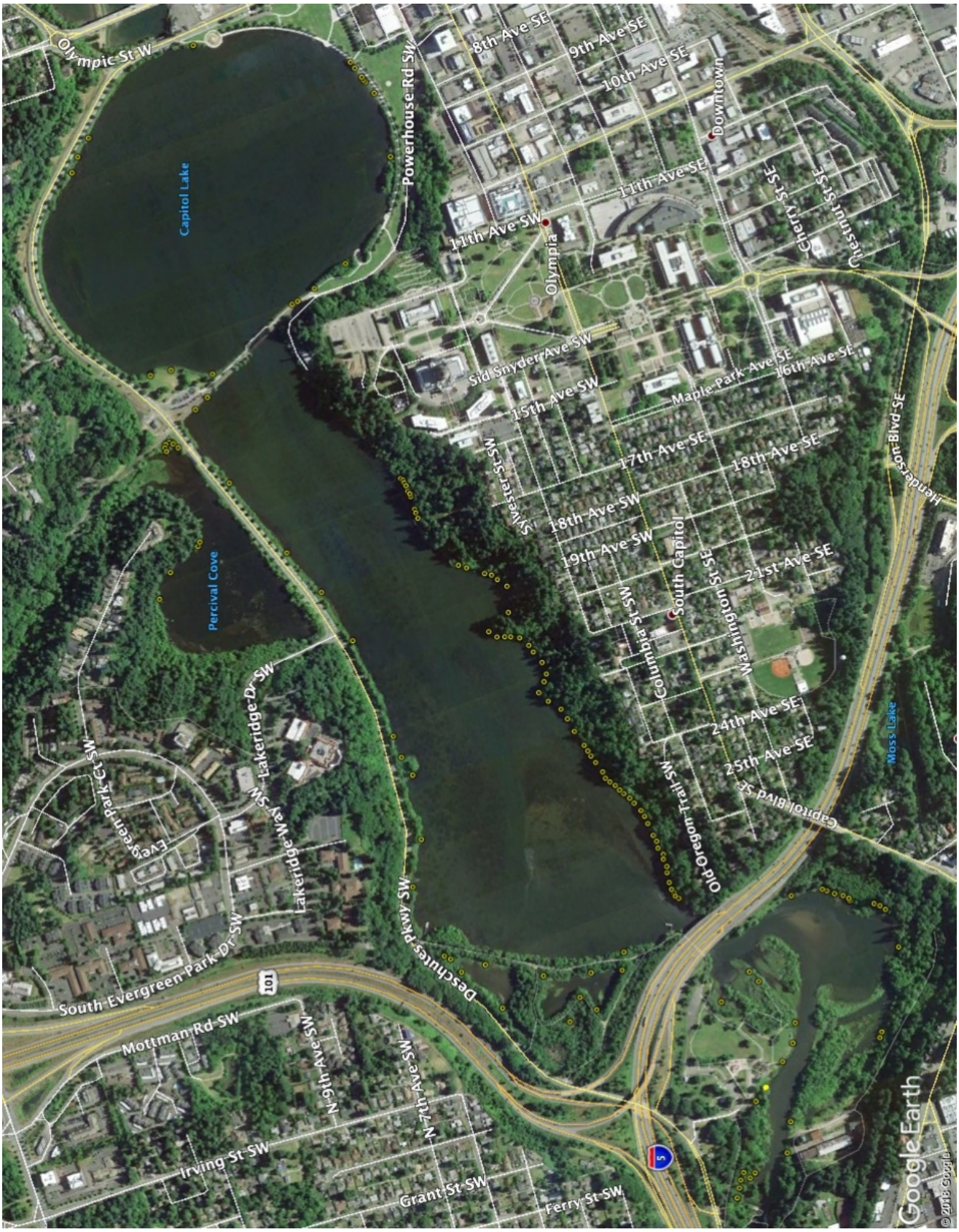
Proposed Management

2018s management proposal of Eurasian Watermilfoil should be implemented and expanded for the 2020 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.

Even though 2019 survey work was not performed due to outside circumstances, Eurasian Milfoil survey work needs to be expanded due to the amount of plants found in 2018. Previous control methods that were used, including more in-depth surveys, individual plant marking, and management could be replicated. If advanced 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 would be to install individual shading cloth or similar material over each plant. This would inhibit the growth of the plants throughout the summer months and reduce the number of milfoil plants that reach maturity and spread in the future.

Yellow Flag Iris (*Iris pseudacorus*)

Capitol Lake 2018 – Yellow Flag Iris Infestation

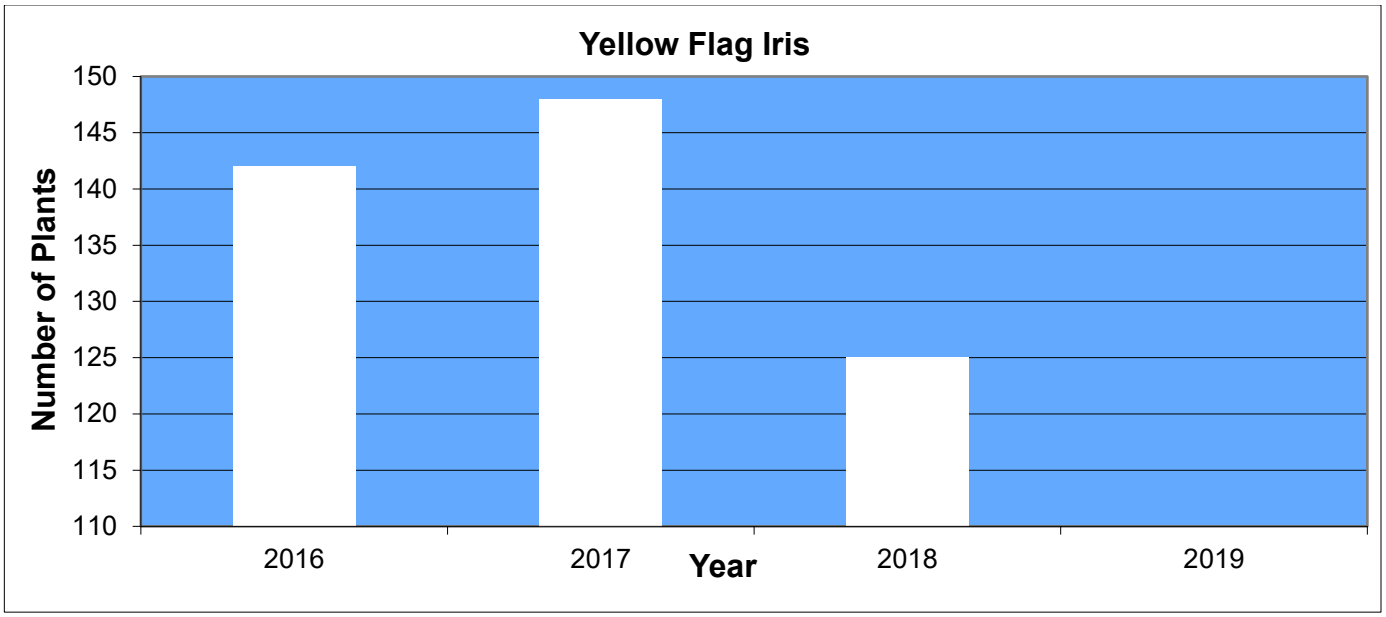


Assessment

Yellow flag Iris plants are 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. 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.

No assessment was recorded for 2019 due to the oil spill that closed the access to the lake.



Control Activities

No control activity was performed for 2019 due to the oil spill that closed the access to the lake.

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 2020 season should continue with the same general strategies as in 2018 including the treatment of the immature plants, assuming the initial assessment finds similar conditions. The chemical change to an Imazapyr product with blue dye will continue in 2020.

More aggressive action should be taken to eradicate the plants that were not in the 2018 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**

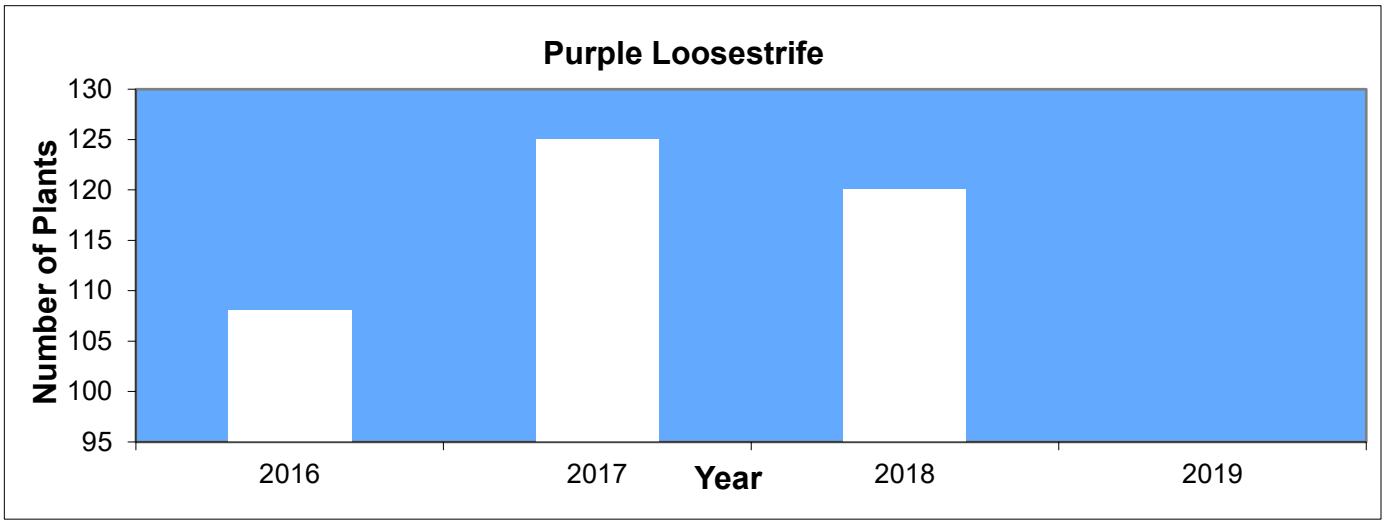
Purple Loosestrife (*Lythrum salicaria*)

Capitol Lake 2018 – 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.

No assessment was recorded for 2019 due to the oil spill that closed the access to the lake.



Control Activities

No control activity was performed for 2019 due to the oil spill that closed the access to the lake.

Proposed Management

2020's management plan for Purple Loosestrife will stay consistent with our goals and strategy from 2018. 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. Also, emphasizing the survey and treatment of immature loosestrife plants. The decision to change chemical to an Imazapyr product with a blue dye should continue into 2020.

Spray Logs Appendix C*

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

Fragrant White-Water Lily (*Nymphaea odorata*)

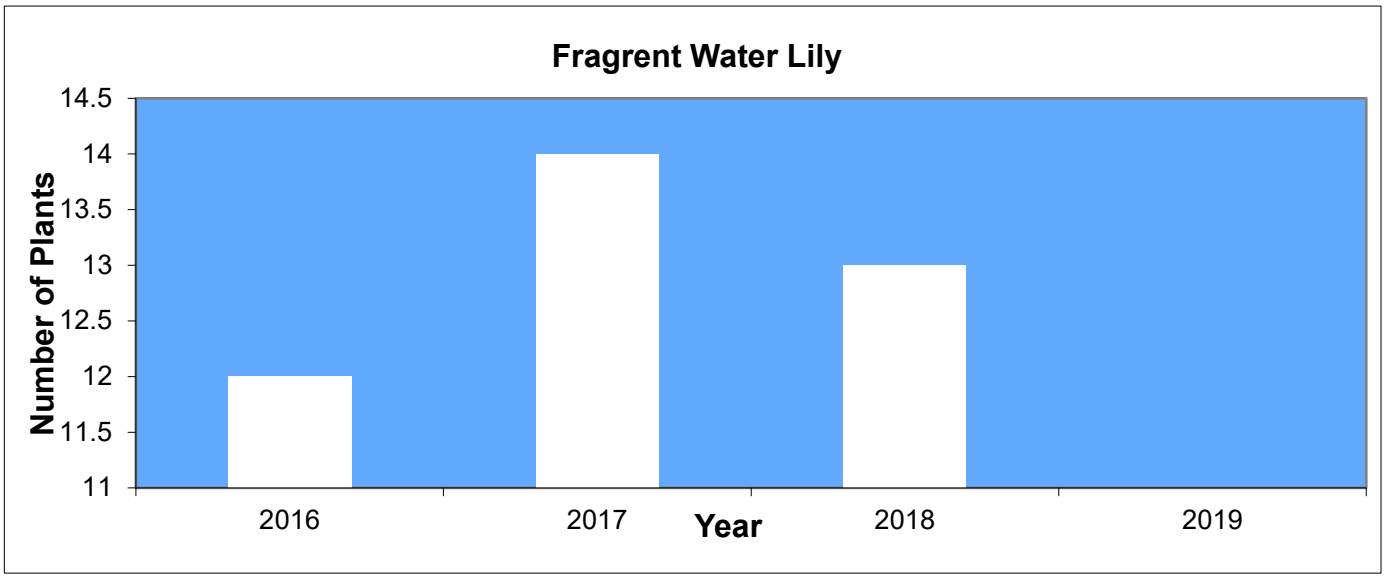
Capitol Lake - 2018 Fragrant White-Water Lily Infestation

Assessment

In relative terms to other Western Washington Lakes this is considered a very small infestation. 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 2018 seasons survey of Fragrant White-Water Lilies resulted in the recording of 6 locations and also one large grouping appearing in the northern most part of the North Basin. There were also 6 locations found in Percival Cove. The pads on Capital Lake have expanded slightly while the pads in Percival Cove have decreased. The Middle and South basins have no recorded Lily Pad growth.

No assessment was recorded for 2019 due to the oil spill that closed the access to the lake.



Control Activities

No control activity was performed for 2019 due to the oil spill that closed the access to the lake.

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.

No assessment was performed for 2019 due to the oil spill that closed the access to the lake.

Control Activities

No control activity was performed for 2019 due to the oil spill that closed the access to the lake.

Proposed Management

As discussed, any Japanese Knotweed infestation found on DES property will be controlled accordingly. If any knotweed is found on DES property than a spray solution of 2% Glyphosate, 1% Imazapyr and a foliar application between the months of mid-July to mid-September will be used in treatment.

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

The following mapped location of Japanese Knotweed is not on Department of Enterprise Services property.

Tansy Ragwort (Senecio jacobaea)

Capitol Lake - 2018 Tansy Ragwort

Assessment

Tansy Ragwort is a Class C noxious weed in Thurston County. Control is required when 25 or more plants are present in an area of 20 acres or less. The area may include more than one parcel if the area is under the same ownership.

No assessment was performed for 2019 due to the oil spill that closed the access to the lake.

Control Activities

No control activity was performed for 2019 due to the oil spill that closed the access to the lake.

Proposed Management

Any future plants that are discovered will be treated to keep the infestation low.

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, 2019

I. ENTITY WITH LIMITED AGENT STATUS

Name of Entity:	Northwest Aquatic Management, LLC		
Contracted Entity Name(s)			**County**
City of Kent			King
Private Customers Treating Noxious Weeds			Thurston
Washington State Department Of Enterprise Services			Thurston
Name:	Kyle Steelhammer		
Mailing Address:	9727 Hwy 12 W #369		
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
Green River	Pierce	9 - Duamish-Green	Blackberry	Triclopyr TEA
Green River Natural Resources Area	Pierce	9 - Duamish-Green	Purple Loosestrife	Imazapyr
Lake St Clair	Thurston	11 - Nisqually	Yellow Flag Iris	Imazapyr
Percival Creek	Thurston	13 - Deschutes	Yellow Flag Iris	Imazapyr
Private Farm Pond	Lewis	23 - Upper Chehalis	Yellow Flag Iris, Purple Loosestrife, Blackberry	Imazapyr
Private Property Near Lake Minterwood	Pierce	15 - Kitsap	Yellow Flag Iris	Imazapyr

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Private Property Wetland	Thurston	13 - Deschutes	Purple Loosestrife	Imazapyr
Small Stream	Thurston	13 - Deschutes	Yellow Flag Iris	Imazapyr
Sunset Lake	Thurston	13 - Deschutes	Yellow Flag Iris	Imazapyr
Union Bay	King	8 - Cedar-Sammamish	Purple and Garden Loosestrife	Imazamox

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, 2019. 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 – Application Records - Yellow Flag Iris and Purple Loosestrife

No records were made for 2019 due to the oil spill that closed the access to the lake.