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Electronically Filed

February 25, 2020

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St. N.E.
Washington, DC 20426

Subject: Spokane River Project License, FERC Project No. 2545, Appendix B Section 5.3(E), Submittal of 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Program Summary Report

Dear Secretary Bose:

In accordance with the Federal Energy Regulatory Commission's (FERC) June 18, 2009 Spokane River Hydroelectric Project (No. 2545) License, Appendix B Section 5.3(E), Avista developed and submitted a Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Program (Program) for FERC's approval. FERC approved the Program on January 13, 2011 allowing Avista to begin implementing aquatic weed control measures.

The Program requires Avista to submit an annual Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report (Summary Report) to FERC, after consulting with the Washington Department of Ecology, Washington Department of Fish and Wildlife and the Washington Department of Natural Resources. Avista consulted with the above mentioned agencies and included copies of the correspondence in Appendix A of the enclosed 2019 Summary Report.

With this, Avista is submitting the 2019 Summary Report to FERC. If you have any questions, please feel free to contact me at (509) 495-4643 or Robert Stephens at (509) 495-8340.

Sincerely,

Meghan Lunney
Spokane River License Manager

Enclosure (1)

cc: Chad Atkins, Ecology
Leslie King, WDFW
Todd Palzer, WDNR
Robert Stephens, Avista

AVISTA CORPORATION

LAKE SPOKANE AND NINE MILE RESERVOIR
2019 AQUATIC WEED SUMMARY REPORT

SPOKANE RIVER LICENSE APPENDIX B

WASHINGTON 401 CERTIFICATION SECTION 5.3(E)

SPOKANE RIVER HYDROELECTRIC PROJECT

FERC PROJECT NO. 2545

Prepared By:
Avista Corporation

February 25, 2020

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Appendix A. Consultation Record

1.0 INTRODUCTION

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued Avista Corporation (Avista) a License (License) for the Spokane River Hydroelectric Project (Project) for a 50-year term (FERC 2009). The Project consists of five hydroelectric developments (HEDs), including the Post Falls HED in Idaho, and the Upper Falls, Monroe Street, Nine Mile and Long Lake HEDs in Washington.

The Washington Department of Ecology's (Ecology) Section 401 Water Quality Certification (Certification), which is incorporated as Appendix B of the License, required Avista to develop an aquatic weed management plan for Lake Spokane, the reservoir created by Long Lake Dam, and for Nine Mile Reservoir, created by Nine Mile Dam. In accordance with the requirement, Avista developed the Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Plan (AWMP; Avista 2010) in consultation with Ecology, the Washington Department of Fish and Wildlife (WDFW), and the Washington Department of Natural Resources (WDNR), in 2010 (Avista 2010). On January 13, 2011, FERC issued an Order modifying and approving the AWMP pursuant to Article 401(a)(5).

1.1 Background

The AWMP was developed to control non-native, invasive, and nuisance aquatic weeds in Lake Spokane, a 5,060-acre, 23.5-mile-long reservoir, created by Long Lake Dam at River Mile (RM) 33.9. The AWMP also includes monitoring for and controlling invasive aquatic weeds in Nine Mile Reservoir, a 440-acre, 6-mile-long reservoir created by Nine Mile Dam (located at RM 58.1).

Lake Spokane was surveyed for aquatic weeds in its entirety in 2000 (TetraTech 2001), 2007 (AquaTechnex 2007), 2012 (AquaTechnex 2012) and again in 2016 (AquaTechnex 2016). The AWMP summarizes the 2000 and 2007 surveys and identifies the following noxious weeds in Lake Spokane: curly-leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (milfoil) (*Myriouphyllum spicatum*), fragrant waterlily (*Nymphaea odorata*) and yellow floatingheart (*Nymphoides peltata*). Flowering rush (*Butomus umbellatus)* was identified in Lake Spokane in 2010 by Ecology. Additionally, in 2012, Avista identified milfoil and reaffirmed flowering rush in Nine Mile Reservoir (Avista 2013). Based on this information, a revised monitoring and control plan was completed and included in the 2013 Summary Report (Avista 2014).

The goals identified in the AWMP, specific to Lake Spokane, are to: (1) reduce invasive and nuisance aquatic weeds at public and community boat access points, (2) maintain a moderate level of ongoing control of aquatic weeds in areas from 0 to 14 feet in depth, through the use of winter drawdowns, and (3) support weed control efforts and facilitate coordination among the entities involved in aquatic weed control on Lake Spokane. Elements of the AWMP, specific to Lake Spokane include:

- Implementing site-specific aquatic weed control actions at the primary recreation access points;

- Implementing a reservoir-wide winter drawdown for the purpose of aquatic weed control; and
- Monitoring to evaluate the effectiveness of site-specific aquatic weed control actions and reservoir-wide winter drawdowns.

The goals identified in the AWMP, specific to Nine Mile Reservoir, are to: 1) monitor annually for milfoil, flowering rush, or other aquatic noxious weeds, and 2) when necessary, recommend and/or implement appropriate treatments.

For both Lake Spokane and Nine Mile Reservoir, the AWMP specifies that Avista will: 1) coordinate aquatic weed management actions with the Cooperating Parties (see Section 2.1) and 2) prepare an annual report summarizing aquatic weed management activities and their effectiveness.

This annual report summarizes aquatic weed management efforts that Avista implemented in 2019, including site-specific aquatic weed herbicide treatments (Figure 1), flowering rush monitoring in Lake Spokane and Nine Mile Reservoir, winter drawdown monitoring, and educational and public outreach activities.

2.0 PLAN IMPLEMENTATION

Avista implements prioritized aquatic weed monitoring and control activities in accordance with the annual Program Task List (List). This List is developed in coordination with the Cooperating Parties on an annual basis. The List includes activities that Avista is directly responsible for and other tasks (i.e. local workshops, conferences, other agreed upon site-specific weed control efforts) that Avista may support. Items on the List include but are not limited to monitoring or surveys for aquatic weeds, site-specific control activities targeting specific public and private lake access points, and education and outreach related to aquatic weed control.

2.1 Coordination with the Cooperating Parties

In order to effectively implement the AWMP, Avista coordinates its weed control activities with the Cooperating Parties, which include Ecology, WDFW, WDNR, the Washington State Parks and Recreation Commission (State Parks), Stevens County Conservation District, Stevens County Noxious Weed Control Board, Spokane County Conservation District, Spokane County Noxious Weed Control Board, Lincoln County Weed Control Board, and the Lake Spokane Association (LSA).

On March 11, 2019, Avista held an annual meeting with the Cooperating Parties and presented proposed tasks for 2019 (Ecology, WDFW, State Parks, and the LSA were in attendance). The 2019 List was refined in coordination with the Cooperating Parties and included the following tasks:

- Evaluate the public and community boat launches in Lake Spokane and potential areas of weed infestation in Nine Mile Reservoir for invasive and/or problematic aquatic weeds,

delineate herbicide treatment areas where necessary, and conduct pre-treatment and post-treatment surveys

- Complete herbicide treatments on Lake Spokane and in Nine Mile Reservoir, as needed
- Conduct soil temperature monitoring during the winter drawdown
- Implement flowering rush monitoring and control in Lake Spokane and/or Nine Mile Reservoir
- Submit the Annual Summary Report to Washington Department of Ecology, WDFW and WDNR
- Submit the Annual Summary Report to FERC following agency review

2.2 Site-Specific Aquatic Weed Control

2.2.1 Aquatic Weed Herbicide Treatment

Lake Spokane

On July 15, 2019, Lakeland Restoration Services (LRS) applied an aquatic herbicide at 10 public recreation areas with boat launches, and community boat launch (CBL) sites on Lake Spokane to reduce aquatic weeds. These sites included the Spokane Lake Park CBL, Nine Mile Recreation Area, Nine Mile Boating Lane, Lake Ridge Park CBL, West Shore CBL, Suncrest CBL, West Shore Boating Lane, Lake Forest CBL (Felton Slough), Willow Bay Resort/Lakeview, and Lakeshore Estates (Figure 1). In total, approximately 31 acres were treated with an herbicide mixture of diquat dibromide (90 gallons), Aquathol (90 gallons), Triclopyr (17.5 gallons) and Clipper (18 pounds).

Pre- and post-treatment surveys were completed on July 12, 2019 and August 6, 2019, respectively, by LRS. Surveys included visual observations and rake toss samples from a boat at each location. The number of rake throws varied, based upon the size of the treatment area, but generally consisted of 3-4 rake throws within the treatment area and 2-3 rake throws outside the treatment area. Data collected included species identification, relative abundance (percent cover by species), and total cover by species.

LRS also conducted a BioBase survey before and after the herbicide application. BioBase is a survey tool that records sonar and Global Positioning System (GPS) information to map and quantify the percent biovolume (BV%) of aquatic plants present in the water column. The efficacy or percent reduction of BV% after the herbicide application is a metric used to determine the effectiveness of an herbicide application. The magnitude of the efficacy at each site varied but overall, the total BV% at nine of the 10 treatment areas in Lake Spokane was reduced by the herbicide application (Table 1). The average pre-treatment BV% in 2019 was 45%, the lowest since BioBase surveys were first conducted (on these same 10 treatment locations) in 2016. This is likely due to the 13 foot drawdown of Lake Spokane occurring from January 14, 2019 through March 22, 2019 that overlapped with below freezing temperatures that

froze exposed lakebed soils. Lowering the water level exposes the aquatic plants and their root systems to drying conditions and freezing that is lethal.

Table 1. Lake Spokane Herbicide Treatment Effectiveness

Location	Aquatic Vegetation Biovolume (%)		
	Pre-	Post-	Efficacy*
Spokane Lake Park CBL	67%	47%	30%
Nine Mile Recreation Area	75%	19%	75%
West Shore Boating Lane	42%	37%	12%
Nine Mile Boating Lane	0%	9%	0%
Lake Ridge Park CBL	43%	8%	81%
Suncrest CBL	18%	8%	56%
West Shore CBL	45%	12%	73%
Lake Forest CBL	87%	32%	63%
Willow Bay Resort	49%	12%	76%
Lake Shore Estates	27%	9%	67%
Average	**45%**	**19%**	**53%**

* Efficacy is determined by the difference between pre-treatment and post-treatment percent biovolume divided by the pre-treatment percent biovolume.

- **Spokane Lake Park Community Boat Launch**. The Spokane Lake Park CBL (Figure 2) is a private community launch on the south shoreline in the upper portion of Lake Spokane, about a quarter mile downstream of the mouth of the Little Spokane River. It has been treated annually since 2012. In 2019, a total of 1.6 acres were treated (Figure 2). Pre-treatment BV% was 67% and post-treatment BV% was 47%, resulting in an efficacy of 30%.

- **Nine Mile Recreation Area.** The Nine Mile Recreation Area treatment area (Figure 3) is located around the community boat launch at the Nine Mile Recreation area, along the south shoreline in the upper portion of Lake Spokane, and has been treated annually since 2011. In 2019, a total of 4.6 acres were treated (Figure 3). Pre-treatment BV% was 75% and post-treatment BV% was 19%, resulting in an efficacy of 75%.

- **West Shore Boating Lane.** The West Shore Boating Lane treatment area (Figure 4) is located downstream of Suncrest Park, in front of the West Shore community, on Lake Spokane's southern shoreline. This area has been treated annually since 2011. In 2019, a total of 3.5 acres were treated (Figure 4). Pre-treatment BV% was 42% and post-treatment BV% was 37%, resulting in an efficacy of 12%.

- **Nine Mile Boating Lane.** The Nine Mile Boating Lane (in Lake Spokane) treatment area (Figure 5) is located approximately one half-mile downstream of the Nine Mile Recreation Area. The boating lane has been treated annually since 2014 and was first

treated in 2011. A total of 11 acres were treated at this location in 2019 (Figure 5). Pre-treatment BV% was 0% and post-treatment BV% was 9%, resulting in an efficacy of 0%. This is the one site were the BV% was higher in the post-treatment survey, which occurred in 2018 as well.

- **Lake Ridge Park Community Boat Launch.** The Lake Ridge CBL treatment area (Figure 5) is located just downstream of the Nine Mile Boating Lane treatment area at the Lake Ridge CBL along Lake Spokane's northern shoreline. This site has been treated annually since 2011. A total of 0.9 acres was treated at this location in 2019 (Figure 5). Pre-treatment BV% was 43% and post-treatment BV% was 8%, resulting in an efficacy of 81%.

- **Suncrest Community Boat Launch.** The Suncrest CBL treatment area (Figure 6) is located at the private boat lunch at Suncrest Park. It has been treated annually since 2011. In 2019, 0.5 acres were treated at this location (Figure 6). Pre-treatment BV% was 18% and post-treatment BV% was 8%, resulting in an efficacy of 56%.

- **West Shore Community Boat Launch.** The West Shore Boating CBL treatment area is located downstream of the Suncrest Park, in front of the West Shore community, and on Lake Spokane's southern shoreline (Figure 6). It has been treated annually since 2011. In 2019, 1.3 acres were treated at this location (Figure 6). Pre-treatment BV% was 45% and post-treatment BV% was 12%, resulting in an efficacy of 73%.

- **Lake Forest Community Boat Launch.** The Lake Forest CBL treatment area (Figure 7) is located in Felton Slough on Lake Spokane's north shoreline and has been treated with herbicide annually since 2012. In 2019, 0.6 acres were treated at this location (Figure 7). Pre-treatment BV% was 87% and post-treatment BV% was 32%, resulting in an efficacy of 63%.

- **Willow Bay Resort/Lakeview.** The Willow Bay Resort/Lakeview treatment area (Figure 8) is located in Willow Bay on Lake Spokane. The Willow Bay Resort and Lakeview community both have boat launches at this location. This area has been treated with herbicide annually since 2011. In 2019, 6 acres were treated at this location (Figure 8). Pre-treatment BV% was 49% and post-treatment BV% was 12%, resulting in an efficacy of 76%.

- **Lakeshore Estates.** The Lakeshore Estates treatment area (Figure 9) is located in the Lakeshore community in the town of Tumtum and has been treated with herbicide annually since 2011. The community has a private boat launch at this location. In 2019, 1.4 acres were treated at this location (Figure 9). Pre-treatment BV% was 27% and post-treatment BV% was 9%, resulting in an efficacy of 67%.

Nine Mile Reservoir

The presence of milfoil and flowering rush in Nine Mile Reservoir was confirmed by Avista in 2012 (Avista 2013). Since then, the Cooperating Parties have controlled milfoil using aquatic herbicides, and flowering rush by hand-pulling and using a diver suction dredge.

2.2.2 Flowering Rush Treatments

Lake Spokane

From 2011 to 2017, Avista removed approximately 4,140 flowering rush plants from Lake Spokane utilizing a diver suction dredge. Flowering rush removal with a diver suction dredge was not conducted on Lake Spokane in 2018 or 2019.

In January 2019, Avista did a drawdown of Lake Spokane from the normal full pool elevation of 1,536 feet down to 1,522 feet where the waterline was held from January 14 and March 22, as a means to reduce the aquatic invasive plant community in the lake (see Section 2.4).

Nine Mile Reservoir

From 2014 to 2017, Avista removed approximately 1,225 flowering rush plants from Nine Mile Reservoir utilizing a diver suction dredge. In 2018, approximately 7,420 pounds (wet weight) of flowering rush was removed. For 2019, Avista planned to control flowering rush with glyphosate by applying the herbicide to the emergent leaves. At least 12" of the flowering rush leaves need to be emergent in order for this method to be effective (Jennifer Parsons, Ecology, personal communication, August 1, 2019). The majority of the Flowering rush in Nine Mile Reservoir never attained the threshold of 12" emergent growth, as a result no herbicide treatments occurred in 2019.

2.3 Lake-wide Aquatic Weed Monitoring

Lake Spokane

Avista collaborated with Ecology and DNR to survey for flowering rush in Lake Spokane starting downstream of Nine Mile Dam, where the waters become navigable by boat, to Willow Bay (Figure 10). Survey results indicated that flowering rush was present 0.7 mile downstream of Nine Mile Dam. Flowering rush could be present further upstream, however the river above this point is non-navigable in a motor boat. From the point of the first detected plant, the presence of flowering rush along the northern shoreline remained relatively consistent until the channel opened up near Nine Mile Recreation Area where fewer plants were observed. Downstream of the Nine Mile Recreation Area, flowering rush was only detected at six sites.

The most recent lake-wide survey for aquatic weeds was conducted in 2016 when Aquatechnex LLC completed an Aerial Shoreline Analysis (ASA) for both Lake Spokane and Nine Mile Reservoir to identify and map aquatic weeds. The ASA was completed utilizing a high resolution digital camera linked to a GPS receiver that recorded location points to identify areas with aquatic weeds. The areas were then mapped and the species identified utilizing the point-intercept method and hydroacoustic aquatic vegetation mapping. The 2016 survey indicated a total of 1,479 acres of aquatic vegetation in Lake Spokane, which included the following estimated acreages, listed by dominant plant species:

- Milfoil - 221 acres;

- Curly leaf pondweed - 152 acres;
- Flowering rush - 34 acres;
- Native pondweed and/or elodea - 771 acres;
- Floating Yellow Heart - 66 acres;
- Fragrant water lily - 235 acres; and
- Flowering rush - 34 acres

Nine Mile Reservoir

A 2016 survey for aquatic weeds in Nine Mile Reservoir estimated 20.3 acres of milfoil (5% of Nine Mile Reservoir). Aquatic herbicide treatments completed in Nine Mile Reservoir have been effective at reducing milfoil during the year that the application occurs but the plant returns the following year maintaining a similar distribution and abundance. This maintenance-type of management, when conducted annually, can improve water quality and recreational experiences for people swimming, boating, or fishing by reducing the biovolume of aquatic weeds.

The presence of flowering rush in the Spokane River watershed has steadily grown in distribution and abundance despite control efforts. Aquatic weed surveys conducted in Nine Mile Reservoir in 2013 and 2014 reported 200 and 1,150 flowering rush plants, respectively. Even though 1,225 flowering rush plants were removed during the years of 2014 to 2017, a 2019 survey of Nine Mile Reservoir observed thousands of flowering rush plants to be present. Additionally, the presence of flowering rush in the Columbia River was confirmed for the first time in 2019 (J. Parsons, WA Department of Ecology, personal communication). It was found at the confluence of the Spokane and Columbia Rivers along the western shoreline of the Columbia River and the population extends at least eight miles downstream. Through rhizome fragments and rhizome buds, it quickly disperses and colonizes new areas with the assistance of water movement. There are currently no known effective control methods (Columbia Basin Cooperative Weed Management Area (2019).

On August 16, 2019, Avista surveyed approximately 11 miles of shoreline in Nine Mile Reservoir for flowering rush using a motor boat (Figure 11). The goal was to determine the distribution of flowering rush along both sides of the shoreline, as well as the upper extent of flowering rush in the Spokane River system. The downstream extent of the survey begins at Nine Mile Dam and the upstream extent of the survey was limited by shallow waters that became unnavigable. This point was approximately 0.5 miles upstream of Plese Flats Boat Launch. Thousands of flowering rush plants were observed throughout the entire survey area with the highest densities occurring in areas of slow moving water.

2.4 Lake Spokane Drawdown

As part of implementing the AWMP, Avista plans annual Lake Spokane drawdowns of 13-14 feet for a period of three to six weeks in late December through February to control aquatic weeds. The frequency, duration, and timing of the drawdown is weather and flow dependent, but Avista strives to draw the reservoir down at a minimum of once per four-year period. Since the implementation of the AWMP in 2011, weather condition have only been suitable for

drawdowns of 13-14 feet in 2012 (35 days), 2013 (4 days), 2014 (20 days), 2016 (3 days), 2017 (9 days), and 2019 (76 days).

In 2019, the drawdown from the normal full pool elevation of 1,536 feet was initiated on December 26, 2018. The target drawdown level of 1,522 feet was reached on January 14, 2019 and maintained at that level for 76 days through March 22, 2019. This period overlapped with below freezing temperatures that froze exposed lakebed soils. Lowering the water level exposes the aquatic plants and their root systems to drying conditions and freezing that is lethal. Since the implementation of the AWMP, this is the first occurrence of soils freezing in the area of the drawdown (Avista 2018).

Winter Drawdown Soil Temperature Monitoring

Soil temperature monitoring occurred at two locations on Lake Spokane: the Nine Mile Recreation Area and at the Willow Bay Resort (Figures 3 and 8). These are the same two areas soil temperature monitoring data was conducted in 2012 and 2014. Two monitoring sites were set up at each location, one near the normal full pool elevation of 1536 ("shoreline") and one site near the drawndown elevation of 1524 ("waterline"). At each monitoring site, soil temperature was recorded and 3, 6, 9 and 12 inches below the soils surface (Table 2). Air temperature was recorded at the Nine Mile Recreation Area.

Temperature was recorded hourly using HOBO U22 Water Temperature Pro v2 loggers, with a resolution of ±0.02 C. Loggers were mass verified before deployment by submersing each logger in an ice bath for 20 minutes and then leaving them at room temperature for 20 minutes to check for consistency between loggers and a NSF certified thermometer.

Table 2. 2019 Soil Temperature Results in Lake Spokane

Location	Depth (inches)	Days <32	Date Range <32	Minimum Temperature (C)
Nine Mile Shoreline	3	41	2/5 - 3/17	27.12
Nine Mile Shoreline	6	0	--	32.09
Nine Mile Shoreline	9	0	--	32.99
Nine Mile Shoreline	12	0	--	33.63
Nine Mile Waterline	3	5	2/7 - 2/11	30.83
Nine Mile Waterline	6	0	--	33.53
Nine Mile Waterline	9	0	--	35.06
Nine Mile Waterline	12	0	--	35.88
Willow Bay Shoreline	3	41	1/15 2/5 - 3/15 3/16	22.08
Willow Bay Shoreline	6	38	2/7 - 3/15 3/16	27.33
Willow Bay Shoreline	9	34	2/10 - 3/15	31.01
Willow Bay Shoreline	12	14	2/11 - 2/15 2/27 - 2/28 3/3 - 3/9 3/11	31.69
Willow Bay Waterline	3	0	--	32.59
Willow Bay Waterline	6	0	--	34.32
Willow Bay Waterline	9	0	--	35.49
Willow Bay Waterline	12	0	--	36.55
Air temperature (Daily Average; C)		42		15.38

Nine Mile Recreation Area

Soil temperature monitoring occurred from January 4 through March 19. The shoreline loggers were deployed from January 4 through March 19, whereas the waterline loggers were deployed from January 14 through February 18. Soil at each location consisted of a silt/clay/mud size class. At the shoreline monitoring location, only the 3 inch depth reached temperatures less than 32.0 ºC and remained less than 32.0 ºC for 41 straight days (Table 2). Soil temperatures reached less than 32.0 ºC at the 3 inch depth for 5 straight days at the waterline monitoring site.

Willow Bay Resort

Soil temperature monitoring occurred from January 4 through March 19. The shoreline loggers were deployed from January 4 through March 19, whereas the waterline loggers were deployed from January 14 through February 18. Soil at each location consisted of a sand to gravel size

class. At the Willow Bay shoreline monitoring location, temperatures less than 32.0 ºC reached down to 12 inches in depth (Table 2). Temperatures were less than 32.0 ºC from the surface to 12inches in depth for 14 days while temperatures remained below 32.0 ºC for 41 days at 3 inches in depth. Soil temperatures did not drop below 32.0 ºC at the Willow Bay waterline location.

Winter of 2019 had optimal weather to result in soil temperatures going below freezing. Below average temperatures in the region started on February 5 and continued through mid-March, which included a stretch from February 17 through March 3 where high ambient air temperatures did not exceed 1 C and lows did not get above -7 C. With little to no snowfall on the ground at the beginning of this these cold temperatures, the soil was exposed to the cold atmospheric temperatures, resulting in the observed decreasing the soil temperatures. Snow began to fall around February 10 and persisted through mid-March, accumulating more than 16 inches of snow at the Spokane Airport. It is likely that the snow insulated and maintained the areas of frozen soil into mid-March after the ambient air temperatures began exceeding 1 C on March 4.

2.5 Lake Spokane Drawdown Vegetation Monitoring

Drawdown vegetation monitoring was not conducted in 2019. However, the pre-treatment BioBase surveys conducted at ten sites by LRS on July 12, 2019 served as a strong indicator the drawdown treatment was effective. The average percent biovolume (BV%) in 2019 was 45%, the lowest since BioBase surveys were first conducted in 2016. This value is a 26% reduction from the previous low of 61% observed in 2018. Drawdown vegetation monitoring will be reinstituted on an annual basis in 2020.

Ten vegetation monitoring locations were established in 2011 in recreation areas and boat launches, community boat launch areas, and in problematic aquatic weed areas for drawdown monitoring on Lake Spokane. Monitoring has been completed during June-August and consists of rake throws and visual observations made at each of the ten monitoring locations. Data is recorded on field monitoring sheets and include the specific dates, monitoring locations, species observed (Table 3), relative abundance, total cover by species, estimated plant height and/or biomass (when possible) for each 10 x 10-foot sampling plot. The data is collected to assess if the overall plant cover and biomass is reduced due to the winter drawdowns. Drawdown monitoring results from 2011-2018 are presented in Table 4.

Table 3. Species Observed During Drawdown Vegetation Monitoring

Species Observed During Surveys	
Common Name	**Scientific Name**
Sago pondweed	*Potamogeton pectinatus*
Elodea	*Elodea canadensis*
Najas	*Najas spp.*
Muskwort	*Chara spp.*
Coontail	*Ceratophyllum demersum*
Curlyleaf pondweed	*Potamogeton crispus*
Flat-stem pondweed	*Potamogeton zosteriformis*
Eurasian watermilfoil	*Myriophyllum spicatum*

Table 4. Drawdown Monitoring - Total Cover of All Species Observed

Monitoring Location	Total Cover of all Species*							
	2011	2012	2013	2014	2015	2016	2017	2018
Lake Spokane Campground W	5%	0%	0%	0%	2%	5%	1%	---
Lake Spokane Campground E	16%	20%	45%	10%	15%	20%	30%	---
Lakeshore Estates	43%	70%	85%	65%	75%	65%	40%	---
Willow Bay Resort	66%	46%	75%	75%	75%	80%	45%	---
Lake Forest Community	85%	50%	45%	100%	100%	100%	50%	---
Sportsman's Paradise	100%	45%	105%	105%	105%	105%	100%	---
Suncrest	63%	64%	60%	30%	35%	30%	35%	---
Lake Ridge/Nine Mile Boat Lane	90%	97%	35%	35%	65%	65%	100%	---
Nine Mile Rec Area W	75%	75%	55%	40%	55%	60%	100%	---
Nine Mile Rec Area E	95%	95%	55%	55%	60%	60%	90%	---

*The species composition is a combination of species identified in Table 2. Total cover includes more than one vegetation strata, and could result in cover over 100%.

2.6 Education

The AWMP requires Avista to implement education and outreach activities relevant to minimizing the spread of aquatic weeds as part of the comprehensive Interpretation and Education (I&E Plan). As described in the I&E Plan, Avista cooperates with the relevant agencies to develop brochures and other outreach materials that explain how to minimize the spread of invasive aquatic species.

Avista distributed an aquatic weed brochure, specific to Lake Spokane, which discusses the elements of Avista's AWMP, the benefits of a healthy aquatic weed ecosystem, negative effects of invasive aquatic weeds, and ways to prevent the spread of invasive aquatic weeds. Avista also

worked closely with the Lake Spokane Association to provide educational information on aquatic weed management during its annual meeting.

3.0 PLANNED ACTIVITIES FOR 2020

Avista plans to meet with the Cooperating Parties in January 2020 to develop the List that will identify the annual weed control activities. Avista anticipates the following tasks will be included in the 2020 List:

- Evaluate the public and community boat launches in Lake Spokane and potential areas in Nine Mile Reservoir for invasive or problematic aquatic weeds, delineate herbicide treatment areas where necessary, and conduct pre- and post-treatment surveys;
- Continue implementing herbicide treatments in Lake Spokane and/or in Nine Mile Reservoir, as appropriate;
- Conduct Lake Spokane winter drawdown soil temperature and vegetation monitoring;
- Continue to implement control measures for flowering rush in Lake Spokane and Nine Mile Reservoir;
- Distribute educational brochures and outreach materials provided by Avista and the Cooperating Parties;
- Work with the Cooperating Parties to assess the effectiveness of Lake Spokane drawdowns on controlling aquatic weeds;
- Submit the Annual Summary Report to Ecology, WDFW and WDNR; and
- Submit the Annual Summary Report to FERC following agency review.

4.0 PROPOSED CHANGES TO THE PLAN

No changes are proposed to the AWMP at this time.

5.0 REFERENCES

AquaTechnex. 2007. Aquatic Plant Survey and Mapping Project for Lake Spokane. Prepared by AquaTechnex, Centralia, WA for Avista Corporation, Spokane, WA. Fall 2007.

AquaTechnex. 2012. Aquatic Plant Survey and Mapping Project for Lake Spokane. Prepared by AquaTechnex, Centralia, WA for Avista Corporation, Spokane, WA. Fall 2012.

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Avista. 2013. Lake Spokane and Nine Mile Reservoir 2012 Aquatic Weed Summary. Spokane River Hydroelectric Project FERC Project No. 2545-091.

Avista. 2014. Lake Spokane and Nine Mile Reservoir 2013 Aquatic Weed Summary. Spokane River Hydroelectric Project FERC Project No. 2545-091.

Avista. 2018. Lake Spokane and Nine Mile Reservoir 2017 Aquatic Weed Summary. Spokane River Hydroelectric Project FERC Project No. 2545-091.

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Federal Energy Regulatory Commission (FERC). 2009. Project Nos. 2545-091, 12606-000, Order Issuing New License and Approving Annual Charges for Use of Reservation Lands. Issued June 18. 167 pp.

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FIGURES

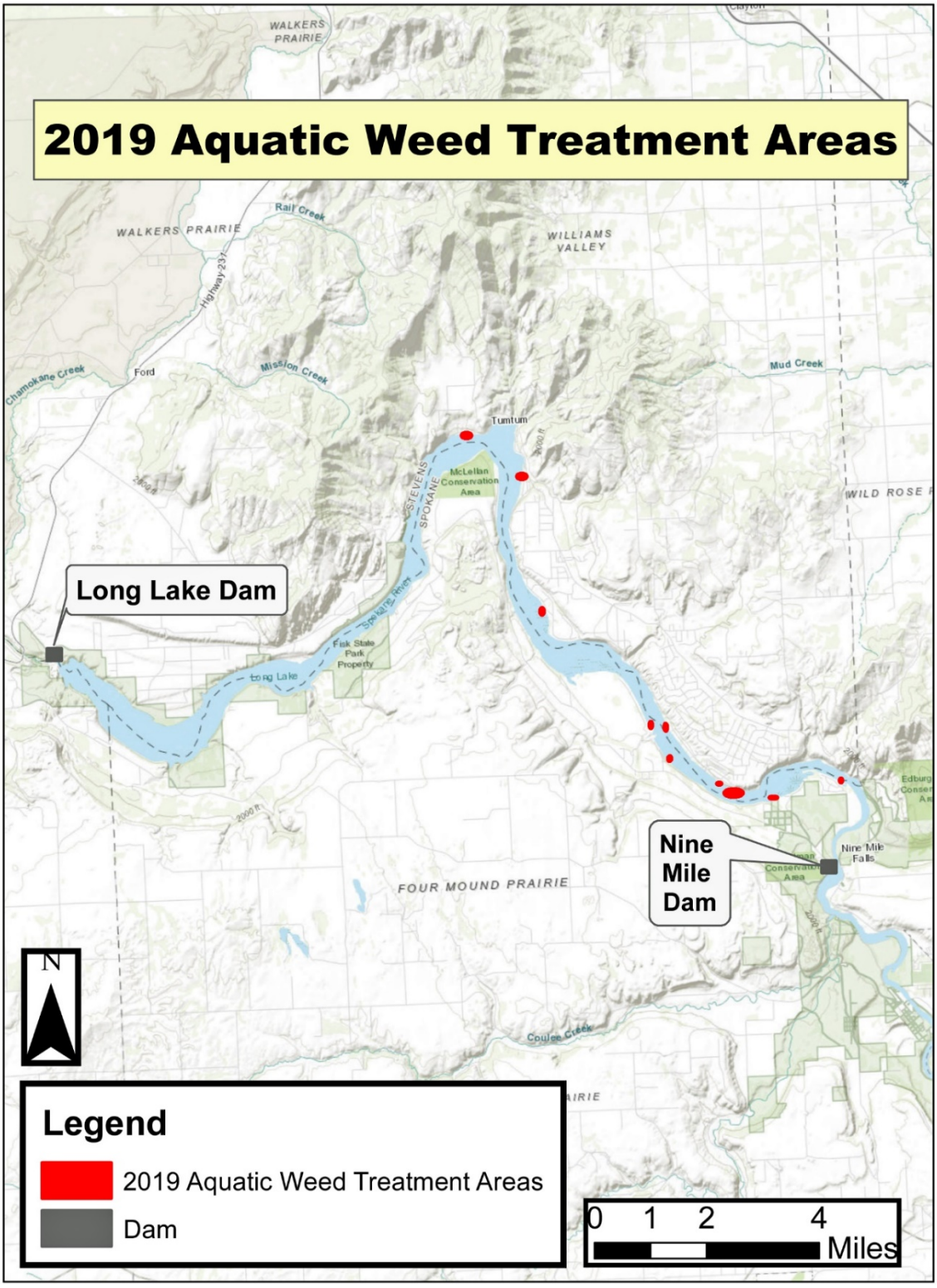

Figure 1. 2019 Aquatic Weed Treatment Areas

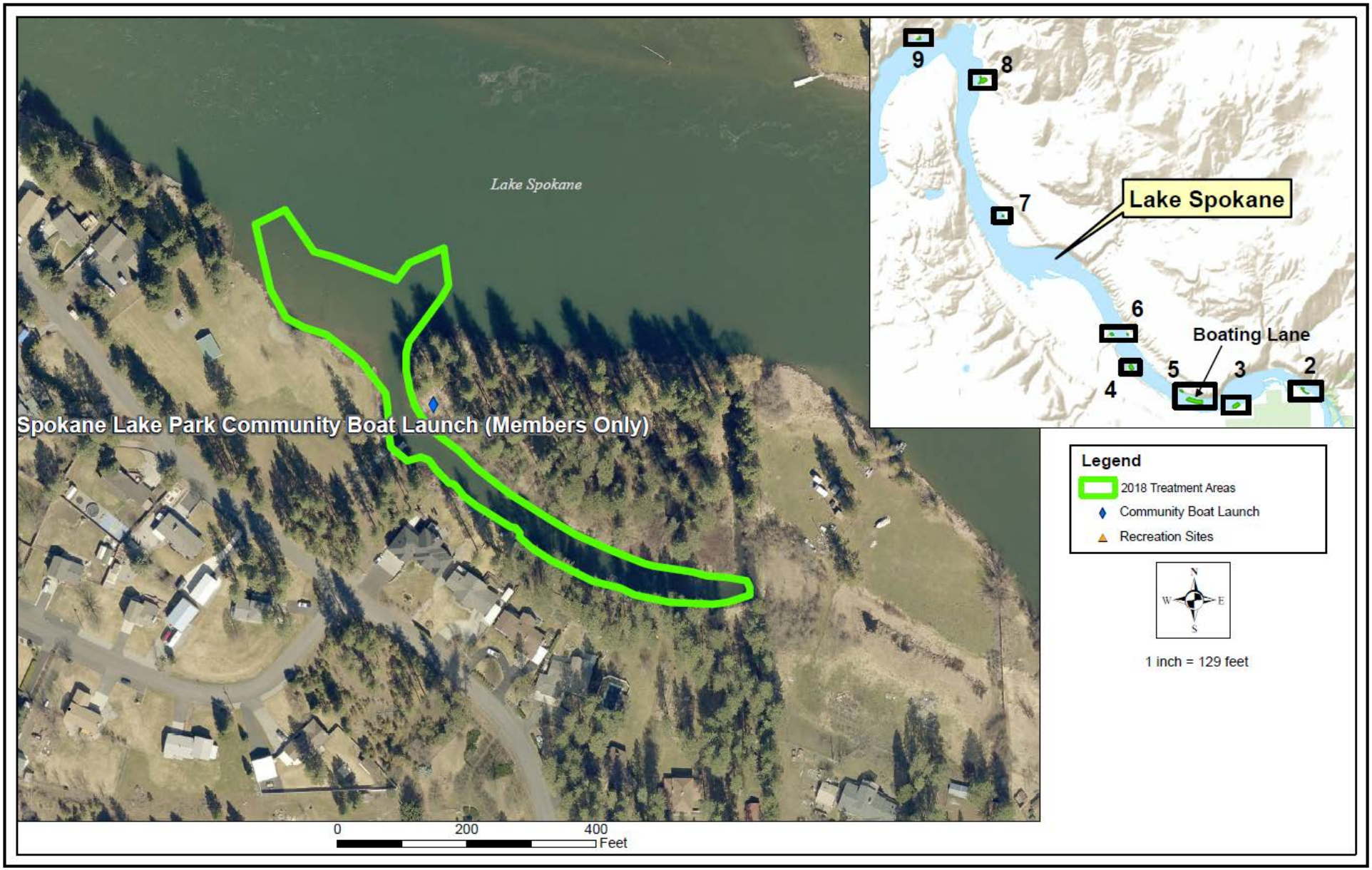

Figure 2. Spokane Lake Park Community Boat Launch 2019 Herbicide Treatment Area

Figure 3. Nine Mile Recreation Area 2019 Herbicide Treatment Area

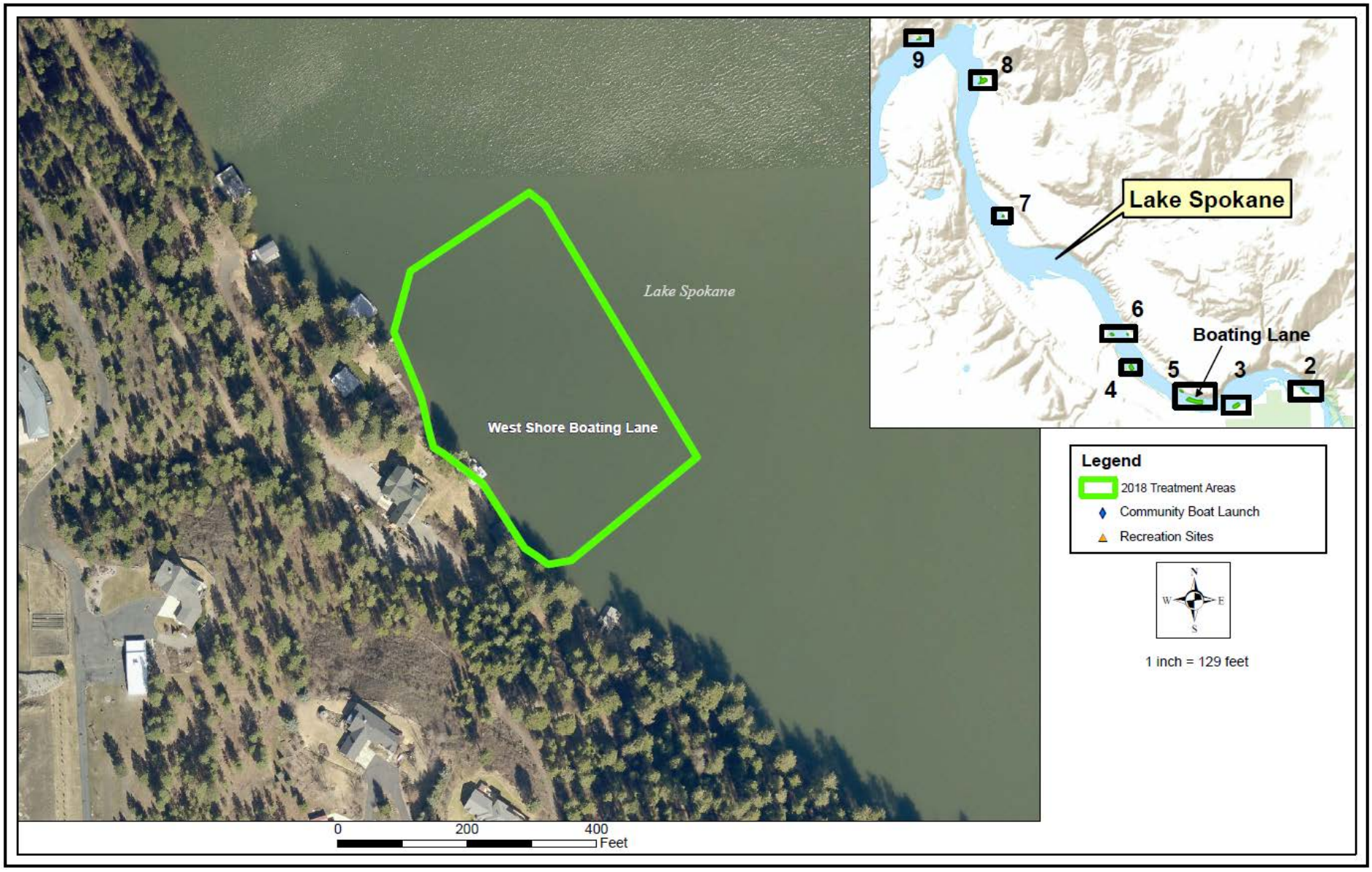

Figure 4. West Shore Boating Lane 2019 Herbicide Treatment Area

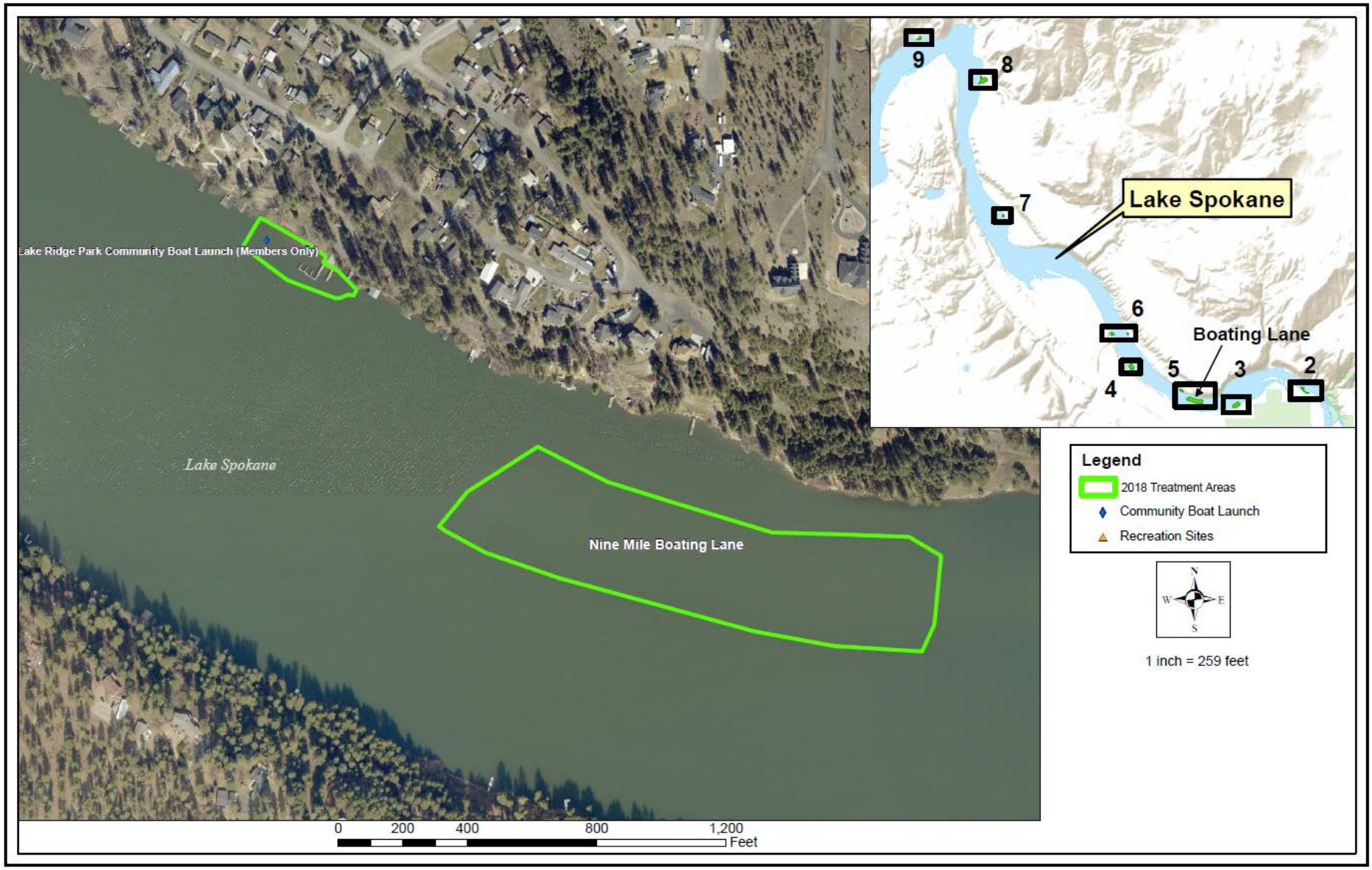

Figure 5. Lake Ridge Park Community Boat Launch and Nine Mile Boating Lane 2019 Herbicide Treatment Area

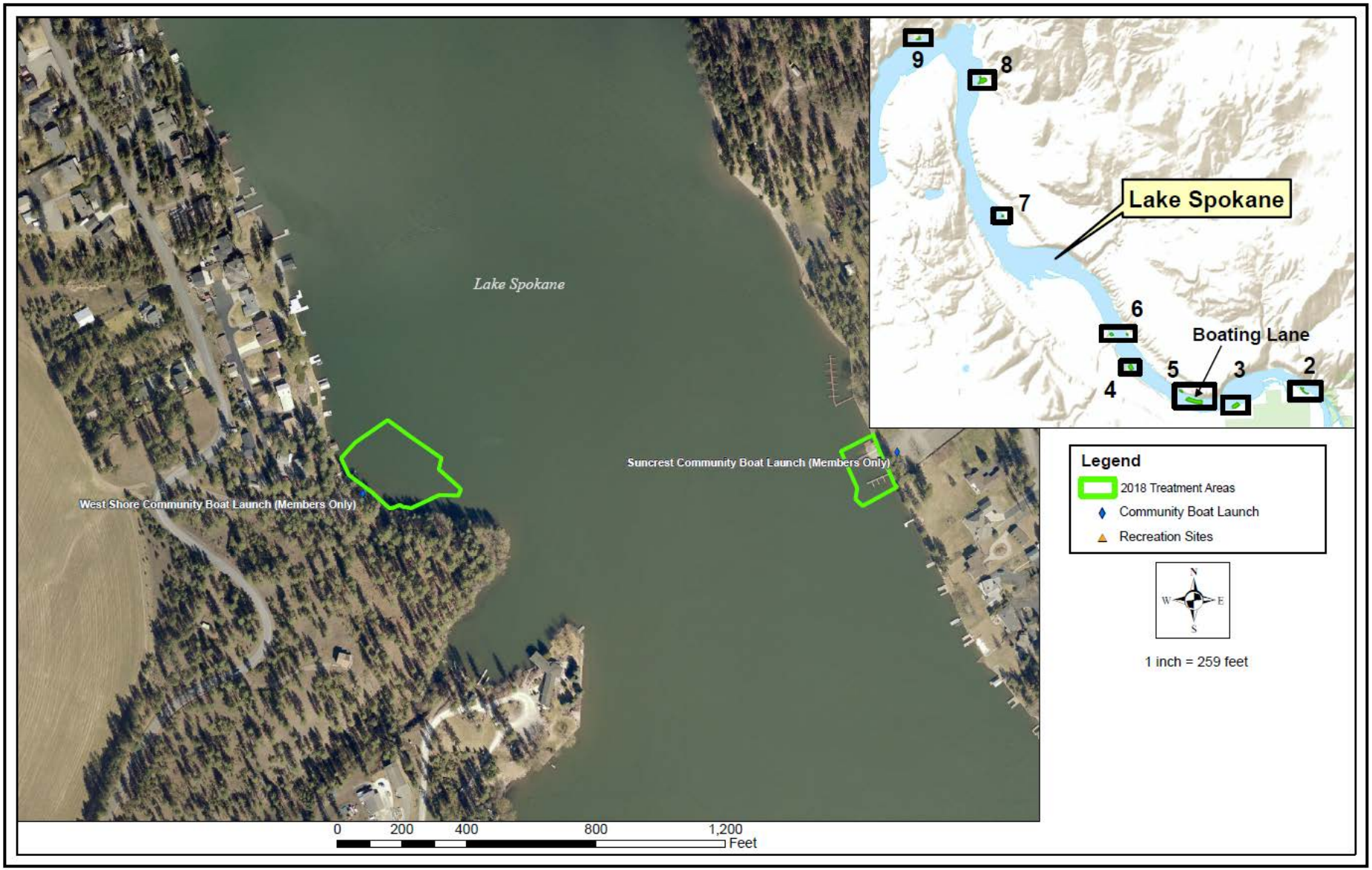

Figure 6. West Shore and Suncrest Community Boat Launch 2019 Herbicide Treatment Area

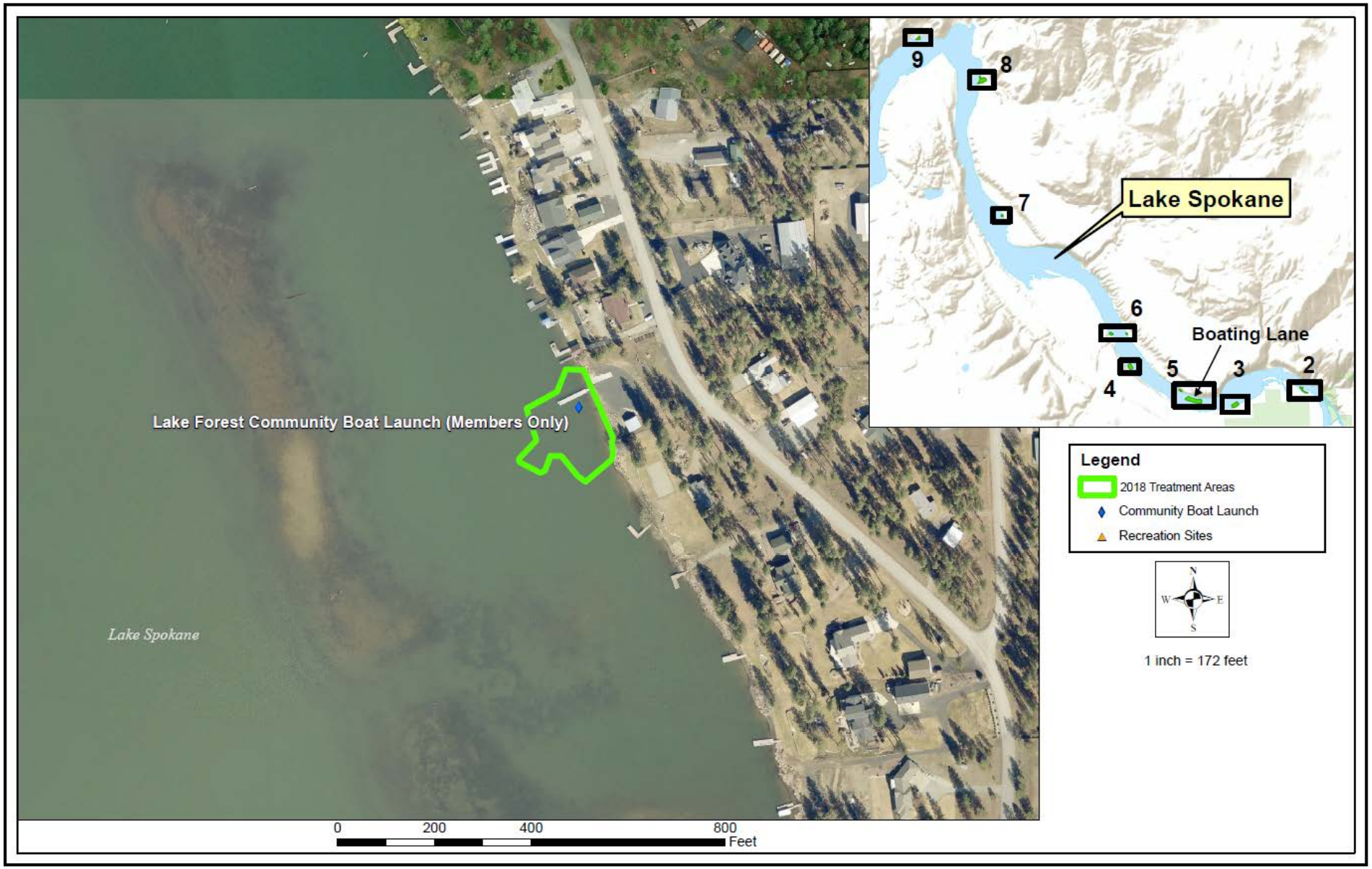

Figure 7. Lake Forest Community Boat Launch 2019 Herbicide Treatment Area

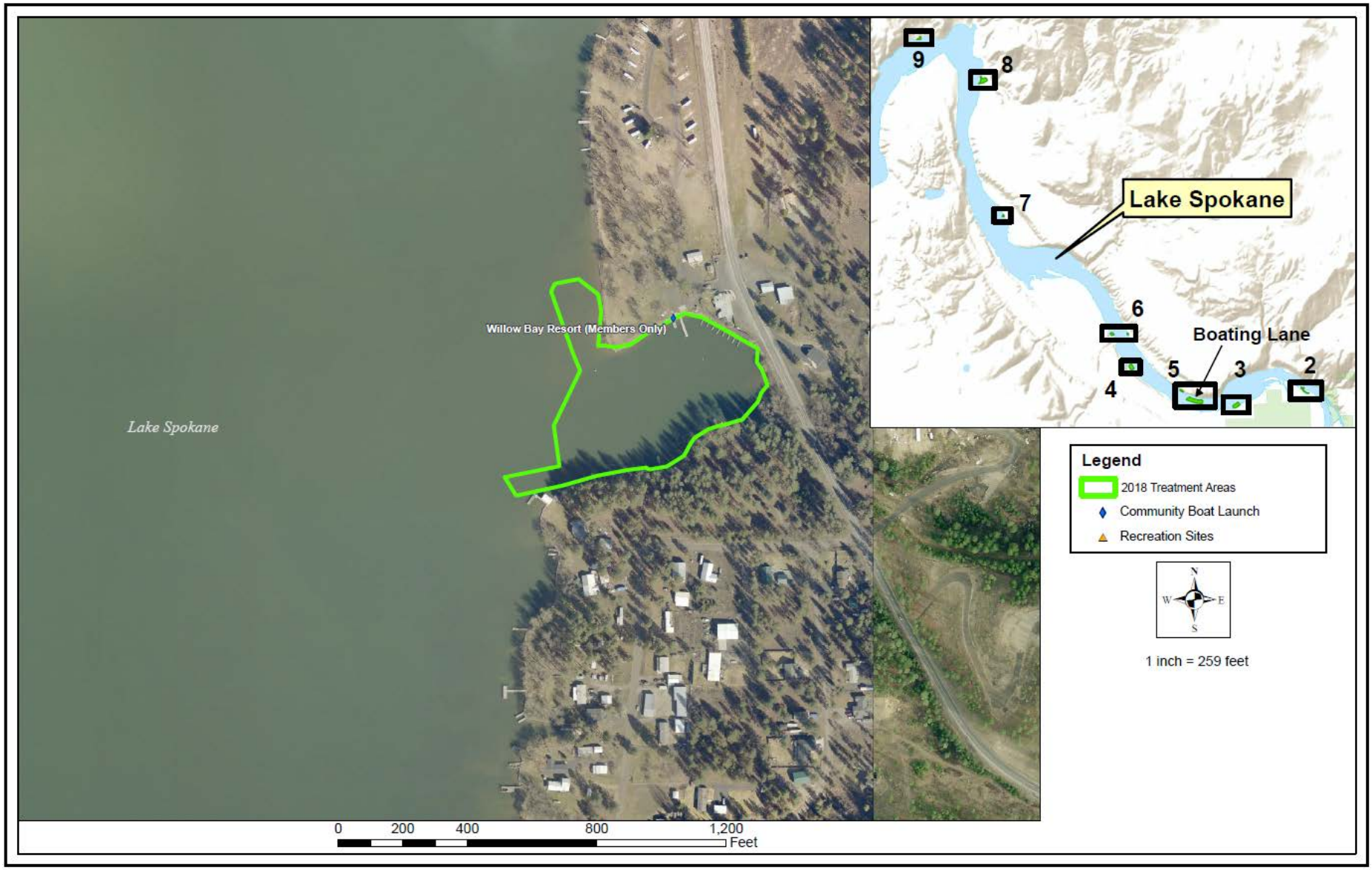

Figure 8. Willow Bay Resort/Lakeview 2019 Herbicide Treatment Area

Figure 9. Lakeshore Estates Community Boat Launch 2019 Herbicide Treatment Area

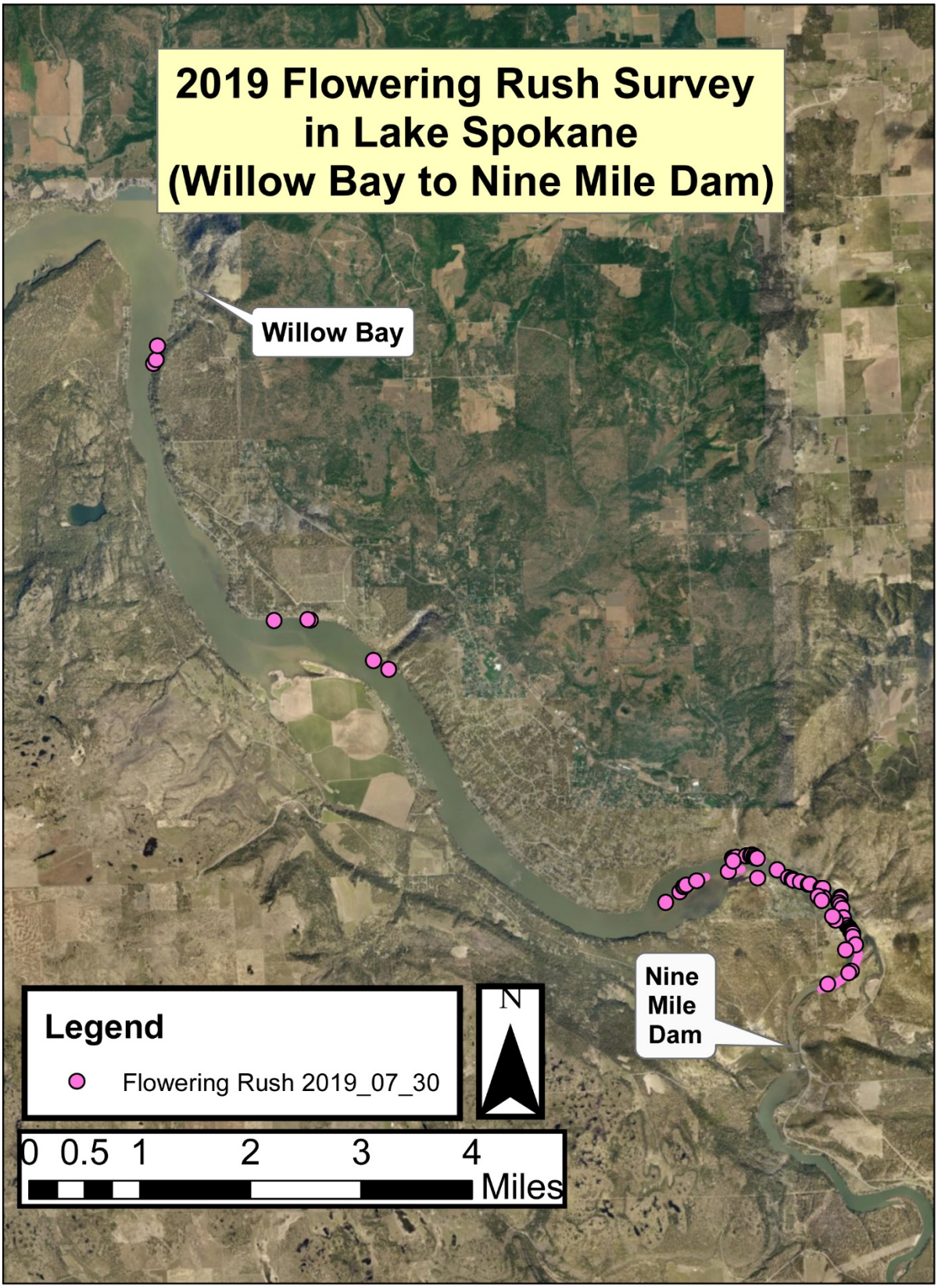

Figure 10. Flowering Rush Survey in Lake Spokane (Willow Bay to Nine Mile Dam)

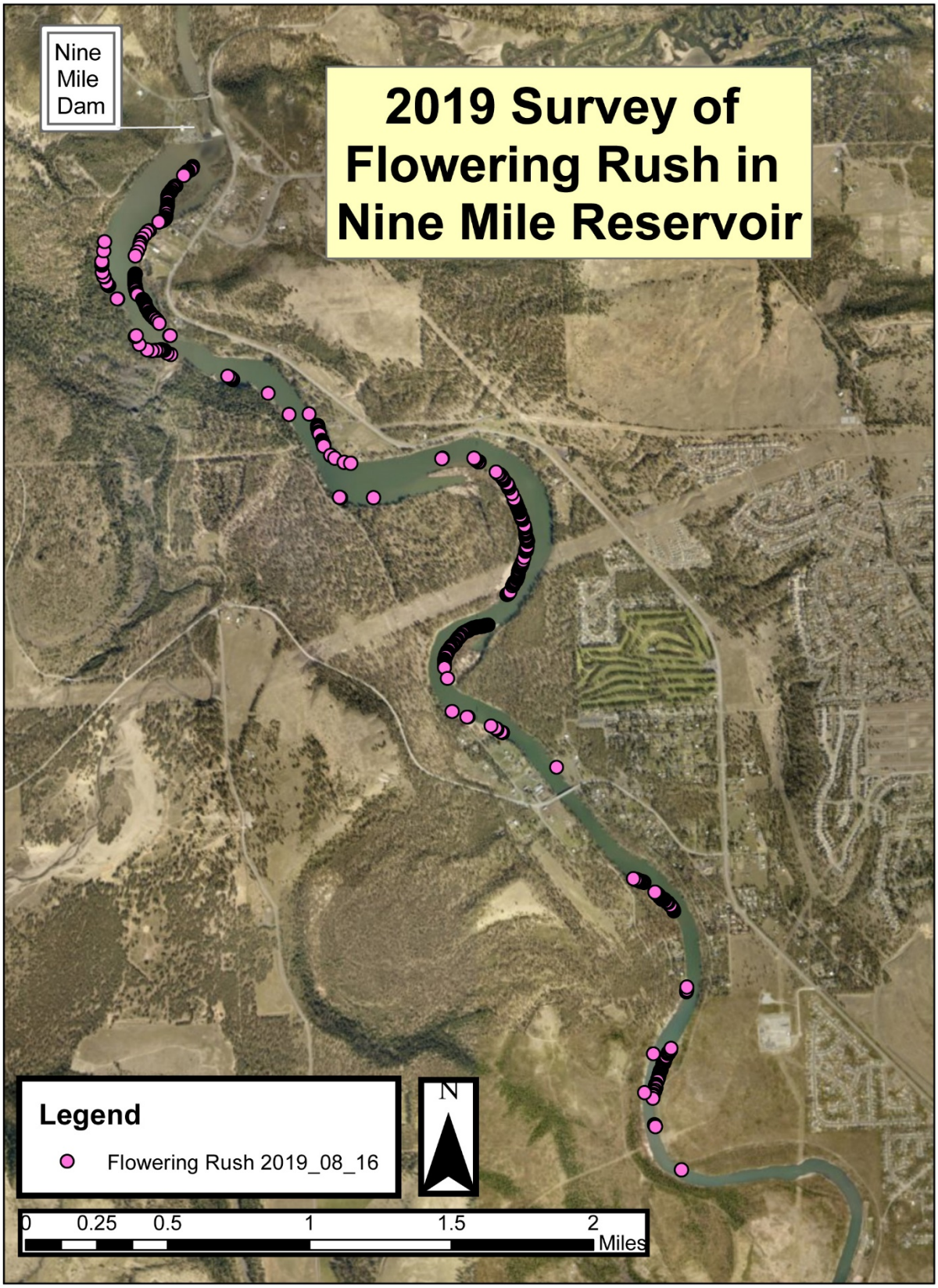

Figure 11. 2019 Flowering Rush Survey in Nine Mile Reservoir

APPENDIX A
CONSULTATION RECORD

Avista's December 30, 2019 Letter to the Washington Department of Ecology

1411 East Mission Avenue
PO Box 3727
Spokane, WA 99220-3727

December 30, 2019

Chad Atkins
Washington Department of Ecology
Eastern Regional Office
4601 N. Monroe Street
Spokane, WA 99205-1295

Subject: Spokane River Project License, FERC Project No. 2545, Appendix B Section 5.3(E), Submittal of the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report

Dear Mr. Atkins:

In accordance with the Federal Energy Regulatory Commission's (FERC) June 18, 2009 Spokane River Hydroelectric Project (No. 2545) License, Appendix B Section 5.3(E), Avista developed and submitted a Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Program (Plan) for FERC's approval. FERC approved the Plan on January 13, 2011. The Plan requires Avista to submit an annual report that summarizes the activities that were implemented during 2019 to monitor and control aquatic weeds on Lake Spokane and Nine Mile Reservoir.

Avista is submitting the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report (Report) for your review. We would like to receive any comments or recommendations that you may have prior to February 1, 2020, which will allow us time to file the Report to FERC by March 1, 2020.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-8340.

Sincerely,

Robert Stephens
Restoration Biologist

Enclosure

cc: Leslie King, Washington Department of Fish and Wildlife
Todd Palzer, Washington Department of Natural Resources
Meghan Lunney, Avista

Washington Department of Ecology did not provide comments on the Summary Report.

Avista's December 30, 2019 Letter to the Washington Department of Fish and Wildlife

1411 East Mission Avenue
PO Box 3727
Spokane, WA 99220-3727

December 30, 2019

Leslie King
Washington Department of Fish and Wildlife
2315 N. Discovery Place
Spokane Valley, WA 99216

Subject: Spokane River Project License, FERC Project No. 2545, Appendix B Section 5.3(E), Submittal of the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report

Dear Ms. King:

In accordance with the Federal Energy Regulatory Commission's (FERC) June 18, 2009 Spokane River Hydroelectric Project (No. 2545) License, Appendix B Section 5.3(E), Avista developed and submitted a Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Program (Plan) for FERC's approval. FERC approved the Plan on January 13, 2011. The Plan requires Avista to submit an annual report that summarizes the activities that were implemented during 2019 to monitor and control aquatic weeds on Lake Spokane and Nine Mile Reservoir.

With this, Avista is submitting the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report (Report) for your review. We would like to receive any comments or recommendations that you may have prior to February 1, 2020, which will allow us time to file the Report to FERC by March 1, 2020.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-8340.

Sincerely,

Robert Stephens
Restoration Biologist

Enclosure

cc: Chad Atkins, Washington Department of Ecology
Todd Palzer, Washington Department of Natural Resources
Meghan Lunney, Avista

Washington Department of Fish and Wildlife's Comments

From: King, Leslie C (DFW)
To: Stephens, Rob
Subject: [External] FW: Avista"s Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report
Date: Friday, January 31, 2020 3:11:19 PM
Attachments: image001.png
Avista_Cover Lttr_LS AW 2019 ASR WDFW.pdf
2019 LS NM Aquatic Weed Summary Report_12-30-19.pdf

Rob,

Thank you for the opportunity to review and comment on the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Program Summary Report. The Washington Department of Fish and Wildlife does not have any comments at this time.

Leslie King
WDFW Habitat Biologist
2315 N. Discovery Place
Spokane Valley, WA 99216
(509) 892-1001 ext. 323

From: Lunney, Meghan <Meghan.Lunney@avistacorp.com>
Sent: Monday, December 30, 2019 12:35 PM
To: King, Leslie C (DFW) <Leslie.King@dfw.wa.gov>
Cc: Atkins, Chad (ECY) <CATK461@ECY.WA.GOV>; PALZER, TODD (DNR) <TODD.PALZER@dnr.wa.gov>; Stephens, Rob <Rob.Stephens@avistacorp.com>
Subject: Avista's Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report

Leslie,

On behalf of Rob Stephens, Avista's Restoration Biologist, I've attached for your review the Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report and associated cover letter. Please provide any comments you may have prior to February 1, 2020, as we are required to submit this report to the Federal Energy Regulatory Commission prior to March 1, 2020.

If you would prefer a paper copy of the attached Report, just let me know and we are happy to send one along. Also, if you have any questions regarding the Report please feel free to call me at 509-495-4643, or Rob Stephens at 509-495-8340.

Thanks,
-Meghan.

Meghan Lunney, Spokane River License Manager
1411 E Mission Ave MSC-1, Spokane, WA, 99202
P 509.495.4643 | C 509.842.6133
www.myavista.com

Avista's December 30, 2019 Letter to the Washington Department of Natural Resources

1411 East Mission Avenue
PO Box 3727
Spokane, WA 99220-3727

December 30, 2019

Todd Palzer
Washington Department of Natural Resources
PO Box 47000
1111 Washington Street SE
Olympia, WA 98504-7000

Subject: Spokane River Project License, FERC Project No. 2545, Appendix B Section 5.3(E), Submittal of the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report

Dear Mr. Palzer:

In accordance with the Federal Energy Regulatory Commission's (FERC) June 18, 2009 Spokane River Hydroelectric Project (No. 2545) License, Appendix B Section 5.3(E), Avista developed and submitted a Lake Spokane and Nine Mile Reservoir Aquatic Weed Management Program (Plan) for FERC's approval. FERC approved the Plan on January 13, 2011. The Plan requires Avista to submit an annual report that summarizes the activities that were implemented during 2019 to monitor and control aquatic weeds on Lake Spokane and Nine Mile Reservoir.

With this, Avista is submitting the 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report (Report) for your review. We would like to receive any comments or recommendations that you may have prior to February 1, 2020, which will allow us time to file the Report to FERC by March 1, 2020.

If you have any questions regarding the Report, please feel free to contact me at (509) 495-8340.

Sincerely,

Robert Stephens
Restoration Biologist

Enclosure

cc: Chad Atkins, Washington Department of Ecology
Leslie King, Washington Department of Fish and Wildlife
Meghan Lunney, Avista

Washington Department of Natural Resources' Comments

From: PALZER, TODD (DNR)
To: Stephens, Rob
Cc: Atkins, Chad (ECY); King, Leslie C (DFW); Lunney, Meghan; Parsons, Jenifer (ECY)
Subject: [External] Re: Avista"s Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report
Date: Wednesday, January 29, 2020 8:30:33 AM
Attachments: image001.png

Rob Stephens - Restoration Biologist
AVISTA
1411 East Mission Avenue
Spokane, WA 99220-3727

Re: WDNR comments on 2019 Lake Spokane and Nine Mile Reservoir Aquatic Weed Summary Report for Spokane River Project License (FERC Project # 2545).

Dear Mr. Stephens,

Thank you for the opportunity to review the 2019 activities summary report related to monitoring and treatment of aquatic weed species within the Spokane River for Lake Spokane and Nine Mile Reservoir conducted by AVISTA as part of the FERC licensing requirements.

DNR supports the work that AVISTA has been doing for weed control and draw down provisions that support these control efforts. The one area that I would ask for future consideration is related to the overall increase and spread of the flowering rush population in both water bodies over multiple survey and treatment seasons.

Flowering Rush is an aggressive invasive species listed as a Class A weed by the Washingron State Noxious Weed Control Board (Class A weeds require eradication versus control under Washington State Law https://www.nwcb.wa.gov/class-a-noxious-weeds) as compared to some of the other listed weed species being managed within Lake Spokane and Nine Mile Reservoir. DNR asks that AVISTA take into consideration the risk posed by a particular species such as Flowering Rush and its state weed classification as part of your resource allocation process for general aquatic weed control in the future.

DNR has partnered with AVISTA through contract in the past to help support flowering rush removal and we are willing to consider reviving such an arrangement if we can help achieve an aggressive approach to flowering rush control that is working towards eradication.

Unfortunately, we won't be able to attend today's meeting in person but will follow up with a call after the meeting has been held. I'm looking forward to discussing this further and see if we can work together to help support AVISTA's efforts and DNR Aquatic Invasive Species program goals.

Sincerely,

Todd Palzer - Aquatic Invasive Species (AIS) Program Manager
Aquatic Resources Division
Washington Department of Natural Resources
1111 Washington Street SE
PO BOX 47027
Olympia, WA 97504-7027

Work Cell - (360) 280-9153

www.dnr.wa.gov

From: PALZER, TODD (DNR)
Sent: Tuesday, January 28, 2020 6:37:40 PM
To: Lunney, Meghan
Cc: Atkins, Chad (ECY); King, Leslie C (DFW); Stephens, Rob
Subject: Re: Avista's Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report

Meghan & Rob,

Thanks for passing on the report for our review and comments. DNR will get our comments back to you in late February or early March. They will likely be similar to last year's based on the survey and treatment information.

However, I would like to discuss if DNR fund additional survey and treatment of the class A weeds such as flowering rush would be desirable in Lake Spokane. I still need to talk with both yourself and Jennifer Parson's regarding the best mechanism to do this.... is it a personal services contract with Avista similar to the one we did in the past or directly contracting with the private applicator while they are in the vicinity (it is Dave Klutz with Lakeland Restoration if I recall correctly?) or possibly our staff conducting treatment in conjunction with your ongoing efforts... the goal would be to promote and tighten focus on the state weed list priorities with a potential funding goal of about $15k for additional project work this coming season if this is something of interest and, to identify if state investment would potentially provide additional match for USACoE flowering rush activities.

Unfortunately, we won't be able to attend the meeting tomorrow in person due to another conflict. Is there a phone or conference # that we could call into tomorrow or possibly have you call me on my cell # before or after the meeting?

Rob, I'm also interested to know if you were able to access that middle area between the upper dam area and the nine mile reservoirs to see if there was any flowering rush present--you mentioned you might access that by kayak later in the season if an opportunity arose. Just curious if you were able to make the trip and, if so, were any flowering rush plants

present.

Todd Palzer - AIS Program Manager
Washington Department of Natural Resources

Office - (360) 902-1864
Work Cell - (360) 280-9153

www.dnr.wa.gov

From: Lunney, Meghan <Meghan.Lunney@avistacorp.com>
Sent: Monday, December 30, 2019 12:35:26 PM
To: PALZER, TODD (DNR)
Cc: Atkins, Chad (ECY); King, Leslie C (DFW); Stephens, Rob
Subject: Avista's Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report

Todd,

On behalf of Rob Stephens, Avista's Restoration Biologist, I've attached for your review the Lake Spokane and Nine Mile Reservoir 2019 Aquatic Weed Summary Report and associated cover letter. Please provide any comments you may have prior to February 1, 2020, as we are required to submit this report to the Federal Energy Regulatory Commission prior to March 1, 2020.

If you would prefer a paper copy of the attached Report, just let me know and we are happy to send one along. Also, if you have any questions regarding the Report please feel free to call me at 509-495-4643, or Rob Stephens at 509-495-8340.

Thanks,
-Meghan.

Meghan Lunney, Spokane River License Manager
1411 E Mission Ave MSC-1, Spokane, WA, 99202
P 509.495.4643 | C 509.842.6133
www.myavista.com

myavista

Washington Department of Natural Resources (WDNR) Comments and Avista's Responses

WDNR Comment

Thank you for the opportunity to review the 2019 activities summary report related to monitoring and treatment of aquatic weed species within the Spokane River for Lake Spokane and Nine Mile Reservoir conducted by AVISTA as part of the FERC licensing requirements.

DNR supports the work that AVISTA has been doing for weed control and draw down provisions that support these control efforts. The one area that I would ask for future consideration is related to the overall increase and spread of the flowering rush population in both water bodies over multiple survey and treatment seasons.

Flowering Rush is an aggressive invasive species listed as a Class A weed by the Washington State Noxious Weed Control Board (Class A weeds require eradication versus control under Washington State Law https://www.nwcb.wa.gov/class-a-noxious-weeds) as compared to some of the other listed weed species being managed within Lake Spokane and Nine Mile Reservoir. DNR asks that AVISTA take into consideration the risk posed by a particular species such as Flowering Rush and its state weed classification as part of your resource allocation process for general aquatic weed control in the future.

DNR has partnered with AVISTA through contract in the past to help support flowering rush removal and we are willing to consider reviving such an arrangement if we can help achieve an aggressive approach to flowering rush control that is working towards eradication.

Unfortunately, we won't be able to attend today's meeting in person but will follow up with a call after the meeting has been held. I'm looking forward to discussing this further and see if we can work together to help support AVISTA's efforts and DNR Aquatic Invasive Species program goals.

Avista Response:

Avista appreciates WDNR's support for monitoring and controlling aquatic weed species within Lake Spokane and Nine Mile Reservoir.

Avista plans to remove flowering rush in Lake Spokane by hand-pulling and diver assisted suction harvesting during 2020. As discussed during the annual Lake Spokane Aquatic Weed Management meeting held in January 2020, Todd Palzer (WDNR) mentioned the possibility of partnering with Avista and providing additional funding sources for flowering rush control. We look forward to continuing discussions regarding opportunities to collaborate and maximize efforts to control flowering rush in Lake Spokane and Nine Mile Reservoir.

With regard to the eradication comment, Avista is unaware of successful control of large-scale flowering rush infestations, let alone the eradication of this species. That said, Avista continues to engage with top experts and researchers working towards effective control of flowering rush.