

**STEEL LAKE
MANAGEMENT DISTRICT
2021 Annual Report**

Prepared by:

Emile Ancelet
Water Quality Supervisor
Public Works Department
City of Federal Way

Author and Contact Information

Emile Ancelet
Water Quality Supervisor
Environmental Services
Public Works Department

City of Federal Way
33325 8th Avenue South
Federal Way, WA 98003
(253) 397-6945
daniel.sternkopf@cityoffederalway.com

For more information contact: Public Works at (253) 835-2700

ACKNOWLEDGMENTS

The City of Federal Way acknowledges the significant contribution provided by each Steel Lake Advisory Committee (SLAC) member who volunteered their time during 2021. The Committee includes the following individuals:

- Lake residents: Tom Dezutter (Chair), Margaret Reyhner (Co-Chair), Jeremy Benson, and Mark Sabol
- City of Federal Way Parks Department: John Hutton (Director)
- Washington Department of Fish and Wildlife: David Heimer

EXECUTIVE SUMMARY

The *Steel Lake Management District 2021 Annual Report* details the efforts achieved in conformance with Ordinance No. 13-744 renewing Steel Lake Management District (LMD) Number 1 which became official January 2014. This report summarizes the lake management goals undertaken in the ninth of the ten-year LMD lifespan.

INTRODUCTION

The Steel Lake community has had a long history of lake management and partnership with both King County and the City of Federal Way. Steel Lake residents and city staff collaborated in 2003 to form Lake Management District Number One for Steel Lake (City Ordinance 03-452). The ten-year LMD was developed to generate revenue for ongoing management of aquatic vegetation, water quality education, and related projects in Steel Lake. The inaugural LMD expired at the end of 2013.

Through 2012 and into 2013, the Steel Lake Advisory Committee discussed, formulated, approved, and finalized a scope of work for a renewal of the LMD. A comprehensive process was followed per the Revised Code of Washington (RCW) 35.21.403, that established the LMD, including the protocols for financing the LMD improvements and maintenance of a lake. Chapter 36.61 RCW also describes the set of activities permitted to be undertaken by an LMD: (1) The control or removal of aquatic plants and vegetation; (2) water quality; (3) the control of water levels; (4) storm water diversion and treatment; (5) agricultural waste control; (6) studying lake water quality problems and solutions; (7) cleaning and maintaining ditches and streams entering or leaving the lake; and (8) the related administrative, engineering, legal, and operational costs, including the costs of creating the lake management district.

The process to establish a renewed ten-year LMD for Steel Lake included:

- A petition signed by 37 Steel Lake property owners;
- Two public hearings;
- One public vote: (60/62 affected property owners voted yes);
- Eight City Council actions: two Ordinances and three Resolutions; and,
- Four published public notices.

The renewed Steel Lake Management District Number 1 (City Ordinance 13-744) allows for the implementation of all activities granted by RCW 36.61.020. A set of management goals to be implemented over the LMD's ten-year period (2014-2023) established in the *2014-2023 Steel Lake Management District Plan* (SLMDP) include:

1. Management of non-native aquatic plants and vegetation;
2. Preservation of native vegetation and aquatic habitat;
3. Management of hazardous algae blooms;
4. Water quality monitoring;
5. Maintenance of the lake outlet channel;
6. Management of Canada geese; and,
7. Community Education and Public Involvement.

AQUATIC WEED ISSUE

Noxious freshwater aquatic weeds are plants that are not native to the State of Washington. They are generally of limited distribution, invasive, and pose a serious threat to our state's waterbodies (including Steel Lake) if left unchecked. Because noxious plants have few natural controls in their new habitat, they spread rapidly, out-compete and effectively destroy native plant and animal habitats. This can lead to a degradation of water quality and recreational opportunities. In addition, the presence of noxious freshwater weeds may lower values of lakefront properties (Ecology, 2014).

The Washington State Noxious Weed Control Board classifies noxious weeds based on each species' stage of invasion. This classification system is designed to: (1) prevent small infestations from becoming large infestations; (2) contain already established infestations to regions of the state where they occur; and, (3) prevent their movement to un-infested areas of Washington. The following three major noxious weed classifications are listed according to the seriousness of the threats posed to the state:

Class A Weeds: Non-native species with a limited distribution in Washington. Preventing new infestations and eradicating existing infestations is the highest priority. Eradication is required by law.

Class B Weeds: Non-native species presently limited to portions of the state. Species are designated for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.

Class C Weeds: Non-native weeds found in Washington. Many of these species are widespread in the state. Long-term programs of suppression and control are a County option, depending upon local threats and the feasibility of control in local areas.

NPDES AQUATIC PLANT & ALGAE PERMIT

In 2021, coverage for Steel Lake continued under the state of Washington Department of Ecology (Ecology) National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit (permit) for the management of aquatic plants and algae. Permit issuance complies with state law and maintains the state's ability to regulate the use of herbicides in aquatic settings. On April 1, 2016, the five-year NPDES permit (issued under the authority of RCW 90.48) has been implemented by the City's aquatic plant management contractor AquaTechnex, LLC. The permit governs activities such as: aquatic herbicide applications, residential postings/notifications, annual reporting, and records retention. The permit number is WAG994093 and it expires on March 31, 2022.

AQUATIC WEED MANAGEMENT CONTRACT

A new AquaTechnex Professional Services Agreement with the City of Federal Way was finalized, expiring December 31, 2027. The scope of the agreement includes: systematic aquatic plant surveys, implementation of control methods to target aquatic plants (diver hand pulling, hand cutting/raking, diver installation of bottom barriers, diver dredging, removal of floating water lily islands, treatment with Ecology-approved aquatic herbicides), post control surveys, mapping, reports, and attending meetings as required.

2021 AQUATIC WEED MANAGEMENT ACTIVITIES

Systematic Survey – Noxious Plants

AquaTechnex completed the annual initial systematic aquatic plant survey of Steel Lake on June 25, 2021. During the initial survey the boat passes around the lake in the shallow area, defined as 6 feet or less. The shallow area is easily checked from the surface for noxious weed species. Then the plant community is sampled which consisted of transects recorded at approximately 400-500-foot intervals around the shoreline with rake-toss samples taken in a line perpendicular to the shoreline at 5-foot depth intervals to determine the presence and abundance of the lake's aquatic plant species. During the effort, the survey team mapped all submerged, floating, and emergent noxious weeds from a vessel (equipped with Global Positioning System [GPS] equipment), and recorded the location and extent of the plant communities discovered in and around the lake from the surface. A diver performed a more detailed underwater inspection of the littoral zone. The GPS information obtained in the field was later processed for map creation and analysis using ArcView GIS software. Plant location maps may be found in the AquaTechnex Report: *Steel Lake – Summary of Activities in 2021*, (Appendix A).

Noxious weeds found during the 2019 Steel Lake systematic survey included:

- Fragrant water lily (*Nymphaea ordoata*), Class C
- Yellow flag iris (*Iris pseudacorus*), Class C

The following is a discussion regarding noxious weeds documented during the 2021 survey, as reported by AquaTechnex:

Fragrant water lily and Yellow-Flag Iris

During the 2019 surveys of Steel Lake, AquaTechnex observed scattered emergent noxious aquatic plants present on the lake margins, primarily on the south shoreline of the lake, and consisted primarily of Yellow Flag Iris. Fragrant water lily was also found, but only in a few locations with a few pads present.

Native Plant Community

AquaTechnex observed that the diversity of the native plant community in Steel Lake has been increasing, although overall aquatic plant volume is low. Native plants observed include: Muskgrass (*Chara spp.*), Coontail (*Ceratophyllum demersum*), Narrow-Leaf Pondweed (*Potamogeton spp.*), Large-Leaf Pondweed (*Potamogeton amplifolius*), White-Stem Pondweed (*Potamogeton spp.*), Common Elodea, Naiad (*Najas flexilis*), and other native aquatic plants. The native plant community in Steel Lake has a level of diversity common for the lakes in this area. Additionally, the community exhibits a relative dominance of *Najas flexilis*. This plant is native to Washington but has the ability to grow to nuisance levels in an urban lake environment like Steel Lake.

AquaTechnex Recommendations

AquaTechnex did not recommend treatment for submerged aquatic plants, as species diversity is good and aquatic plant biovolume is low. They did recommend treatment of the invasive Fragrant water lily where mapped and residents have requested control measures. They also recommended producing a map of properties that will allow treatment on their property to ensure treatment on those parcels. Lastly, Aquatechnex recommended monitoring blue green algae growth in the future.

WATER QUALITY MONITORING

The King County Lake Stewardship Volunteer Monitoring Program for Steel Lake began in the 1980s and continued for several decades until budget cuts ended the program in 2005. Although the most recent data generated by this program indicated that Steel Lake had been relatively low in primary productivity (borderline oligotrophic to mesotrophic) with very good water quality, a significant data gap exists between then and now.

The long-term objectives of the current Steel Lake Management District Water Quality Monitoring Program include: (1) continuation of the gathering of baseline data with the intent of assessing long-term trends; (2) defining seasonal and water column variability; (3) identifying potential problems, proposing possible management solutions when feasible, or pinpointing additional studies to be made; and (4) educating lake residents, lake users, and policy makers regarding lake water quality.

Monitoring in 2021 began in early May, with samples collected from the surface and near-bottom depths from the deepest part of the lake to define changes found in the vertical profiles of the parameters. A total of six monitoring events took place over the summer months (May – October). Steel Lake 2021 data can be found in Appendix B. Historical data can be found on the King County Lakes website: <http://green2.kingcounty.gov/SmallLakes/WQData.aspx>.

LAKE OUTLET CHANNEL MAINTENANCE

Per the *2014-2023 Steel Lake Management District Plan*, Surface Water Management maintenance personnel inspected the Steel Lake outlet channel and cleared it of debris from S. 304th Street and upstream to the lake shoreline to ensure proper drainage. This effort will continue on a yearly basis during the driest part of the year.

CANADA GEESE MANAGEMENT

The *2014-2023 Steel Lake Management District Plan* indicates that water quality concerns (i.e. toxic algae blooms) may be caused in part by increasing populations of Canada geese (*Branta canadensis*) populating Steel Lake, and the feces (nutrients) they contribute to the water column.

Historic LMD-sponsored efforts to reduce Canada geese populations had limited positive effects. These included: 1) the posting of a “*Stop Feeding the Geese*” sign at the public swimming beach, and 2) implementation of lakeside homeowner waterfowl harassment and scare tactics (i.e. fences, streamers and Eagle Kites). As such, the SLAC approved entering into a Cooperative Service Agreement with the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) to provide comprehensive geese management services as requested.

During 2016, the LMD committee agreed upon a zero geese policy and to continue with geese management on Steel Lake. The preferred method is egg addling, and a second option is conducting a round up. In 2021, the LMD maintained the zero geese policy, but a spring survey by USDA WS determined that populations were not sufficient enough to warrant management actions. The 5-year agreement between the City of Federal Way and USDA Wildlife Services expired September 30, 2019

and was renewed in summer 2019 for an additional five years. No geese management actions were performed during 2021.

PUBLIC INVOLVEMENT AND PUBLIC EDUCATION

Due to COVID-19 the Steel Lake quarterly newsletter, *The Lake View*, was not distributed to lakefront property owners in 2021.

Due to COVID-19 the Fall community public meeting typically held at Steel Lake Park was canceled.

In 2019, Steel Lake began its participation with the Lake Observations by Citizen Scientist & Satellites program funded by NASA with support from UNC, UW, and TTU. Lake level data submitted by citizen scientists is combined with lake surface area data from NASA satellites to determine how lake volumes evolve and respond to weather events over time. The LMD committee decided to install the gauge in late spring/early summer 2019 at the dock in Steel Lake Park.

STEEL LAKE ADVISORY COMMITTEE

The Steel Lake Advisory Committee (SLAC) sets lake management priorities and provides input on the implementation of the annual Work Plan. Resolution no. 13-649, passed by the City Council, created the Advisory Committee for Steel Lake LMD Number 1. The purpose of the SLAC is to provide lakefront property owner representation for the LMD.

Per Resolution No. 13-649, SLAC representation consists of:

- Four (4) individuals representing single family and/or vacant properties; one (1) representing multifamily properties; (1) representing Washington Department of Fish and Wildlife (public boat launch property); and one (1) representing the City of Federal Way Steel Lake Park property.

Member	Representing
Tom Dezutter	Committee Chair, Lake Resident
Margaret Reyhner	Committee Co-Chair, Lake Resident
John Pearson	Lake Resident
Mark Sabol	Lake Resident
John Hutton	City of Federal Way, Director of Parks and Recreation
David Heimer	Washington Department of Fish & Wildlife

Note: due to potential conflicts of interest, WDFW has chosen not to be a voting member of the committee. However, they have indicated that comment will be provided if concerns arise in which they are interested (i.e., issues with the public access property). Additionally, the SLAC seat set aside for multifamily (View at the Lake apartment complex) remained vacant in 2021.

The following outline includes, but is not limited to, the responsibilities of the SLAC:

- Assists in the development of an annual lake management Work Plan and budget;
- Participates in evaluation of aquatic plant control activities and helps to recommend annual control strategies; and,
- Participates in other community involvement/education strategies efforts as needed.

The SLAC met four times in 2021. Full detailed meeting notes, agendas, and members who attended the meetings can be found in Appendix C.

DEVELOPMENT OF 2019 WORK PLAN

The original Work Plan for 2019 can be found in Appendix D. The following is a brief outline of the 2019 Work Plan approved by the SLAC per Ordinance Number 13-649:

Task 1: Aquatic Vegetation Control and Treatment: Identifies and describes the goals for effectively controlling and/or treating targeted noxious aquatic plant species. It also includes an estimate of all associated expenses necessary to accomplish the stated goals.

Task 2: Public Education: Describes all public involvement and public education elements designed to help inform lake residents and users about the impacts of noxious aquatic weeds and the presence of non-native species in Steel Lake. Items in Task 2 may include: community meetings (spring) and Plant ID Workshop (summer); quarterly newsletter (*The Lake View*); boater outreach program; printing and distribution of educational flyers and press releases; web site development; and development of an annual report.

Task 3: Native Aquatic Plantings: As voted by the Committee during the February 19, 2019 quarterly meeting Native Aquatic Plantings has been removed from the Work Plan.

Task 4: Hazardous Algae Bloom Management: Includes Harmful Algae Bloom (HAB) inspections and investigations conducted by SWM staff.

Task 5: Water Quality Monitoring: A comprehensive program to conduct water quality monitoring by SWM staff. Frequency of sampling was reduced from twice to once a month during the February 19, 2019 quarterly meeting, therefore reducing estimated expenditures and budget for this task.

Task 6: Lake Outlet Channel Maintenance: Program to inspect and clean, as necessary, the lake outlet channel to reduce flooding potential.

Task 7: Canada Geese Management: Program to effectively manage Canada geese populations to reduce nutrient loading and public health risk.

Task 8: SWM-Implemented LMD Efforts: Reimbursement of SWM staff time to implement various LMD completed efforts in 2019.

2021 YEAR END FINANCIALS

Steel LMD Budget Totals by Task (2020-2021)

Work Plan Goals/Scope	2020 Actual Expenditures (includes taxes)	2021 Budget (includes taxes)	2021 Actual Expenditures (includes taxes)
TASK 1. Aquatic Vegetation Control/Treatment	\$3,432.00	\$9,000.00	\$2,699.25
TASK 2. Public Education	\$4.00	\$1,000.00	\$ -
TASK 3. Hazardous Algae Bloom Management	\$ -	\$500.00	\$ -
TASK 4. Water Quality Monitoring	\$2,690.49	\$3000.00	\$3,490.50
TASK 5. Lake Outlet Channel Maintenance	\$ -	\$600.00	\$ -
TASK 6. Canada Geese Management	\$444.03	\$2,500.00	\$ -
TASK 7. SWM-implemented LMD Efforts	\$5121.32	\$5,000.00	\$3,575.62
TASK 8. IAVMP	\$ -	\$ -	\$ -
TASK 9. LID Assessment	\$ -	\$ -	\$800
TOTAL EXPENSES	\$11,691.84	\$21,000.00	\$10,565.37
TOTAL REVENUES	\$14,086.88	\$14,500.00	\$17,982.10
YEAR-END BALANCE (CARRYOVER)	31,743.09	\$25,234.09	\$39,159.82