



Milfoil Control Program Asset Replacement Plan 2023



Physical Asset Management for the Okanagan Basin Water Board

Asset management is recognized as an important process for local governments. A proper asset management program can help to ensure financial stability, increase efficiency, and enhance transparency for the public. With the approval of the first Asset Management Plan in 2016, the OBWB significantly improved the operational efficiency and financial planning for milfoil control equipment purchases. In the intervening years, the OBWB has made investments in new equipment, enabling a more cost-effective maintenance and repair regime, meeting updated environmental standards, and increasing worker safety.

*The **purpose** of this Asset Replacement Plan is to increase operational efficiency and enhance financial planning, to ensure that the OBWB has stability in its year over year budgeting process through the proper use of reserves.*

This plan relies on significantly extended useful lifespans on OBWB equipment, compared to what is considered the maximum useful lifespan of similar equipment by the BC Ministry of Finance. In some cases, we may be able to delay the purchase date for replacement equipment even beyond that extended lifespan. This plan meets the need to have appropriate capital reserves on the expected replacement date in order to ensure no reduction in milfoil treatment services.

*The **intent** of this plan is to identify the minimum annual budget necessary to meet the needs of the milfoil control program in order to maintain a consistent level of service.*

The plan was developed with guidance from Asset Management BC, using their “Asset Management for Sustainable Service Delivery” framework. It was also informed by a project in partnership with the University of British Columbia Okanagan which identified a number of gaps in our past processes. The plan is reviewed annually and updated as needed, including any new assets, and incorporating new methods, tools and technology as necessary. This annual review occurs as part of the budgeting process.

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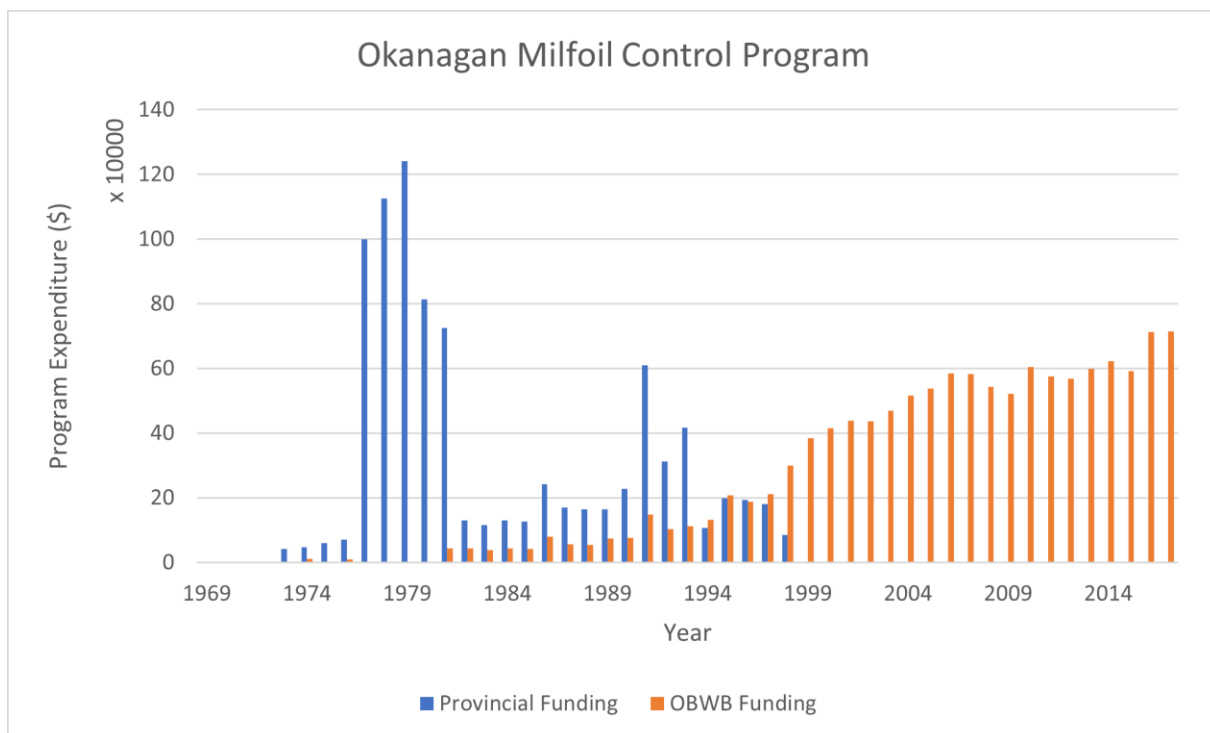
OBWB Assets – Informing the Plan

This plan was developed, and should be reviewed annually by asking the following questions:

- What is the current and desired or targeted level of service?
- What service and asset risks need to be prioritized and managed?
- What assets are owned by the OBWB and where are they?
- What are the depreciated and replacement value of those assets
- What are the conditions (physical, demand/capacity and functionality) and expected remaining life of those assets?
- When will repair, upgrade, or replacement be required?
- Which assets can or should be retired?
- Which new assets may be required and when?

Milfoil Control Program

The milfoil control program treats more than 50 linear km of shoreline in the Okanagan. The program uses large aquatic rototillers to de-root the plant during the winter, and large aquatic harvesters to cut and remove plant material during the summer. All maintenance and the majority of equipment transport is done by staff, with OBWB equipment keeping costs down. Due to this efficiency and dedicated maintenance, our machines have far surpassed the useful lifespans listed by the B.C. Ministry of Finance, with the average age of OBWB assets being 27.5 years old. The original milfoil control program, established in 1973, was a partnership between the B.C. Ministry of Environment (MOE) and the OBWB. Initially, the province bore much of the cost for capital purchases. In 1999 the province cancelled its participation in the program and since then, all costs have been borne solely by the OBWB.



Diagnosing governance network attributes of a Canadian watershed organization, Jatel, Nelson R. 2022 – Pre-publication

All property owners in the Okanagan pay into the milfoil control program, which prioritizes treatment for public beaches over any other infested area. Areas adjacent to private property – the lowest priority – have typically also been treated, free of charge, as our operational timelines allowed us to treat identified infested areas. In the past few years, the level of service near private property has been reduced, mainly due to development along the shorelines near urban areas, which reduces our ability to transfer the harvested weeds to land. There have also been increased calls for treatment in new areas as human expansion along our shorelines continues. While the priority for treatment is on public beach areas, OBWB also recognizes that all the water in our lakes is publicly accessible. This is why we have consistently treated as much milfoil as possible in different areas, regardless of adjacent land use.

Level of Service

What is the current and desired or targeted level of service?

The target level of service is to continue treatment at public beaches, boat launches, marinas, and high-traffic areas throughout the five mainstem lakes (Wood, Kalamalka, Okanagan, Skaha and Osoyoos¹), while maintaining our ability to respond to milfoil outbreaks in lower-priority areas.

Service and Asset Risks

What service and asset risks need to be prioritized and managed?

Service Risks: People are settling into new areas of lakefront in the valley, while local governments improve lakefront parks and beach areas. This has reduced access to sites which we have historically used for the program. We also face a risk from the unknown effects of climate change, and its implications for milfoil growth, and the effectiveness of our treatments. Finally, the Okanagan Lake Regulation System review is a risk to our operational scheduling as we struggle with lake-level changes, restricting access for our equipment.

Asset risks: Much of our aging equipment has been replaced over the last 5 years, with a few major pieces of equipment now well past their extended lifespan and requiring replacement. Further, new service risks, outlined above, may necessitate new types of equipment to assist with the launching and recovery of machines, and with transferring the weeds to shore for disposal.

Research and Development

As shown in the graph above, the province had significant start-up costs related to R&D and capital purchases to find effective methods for milfoil control in the late 1970s and early 1980s. With the increasing service and asset risks listed above, some of these 50-year-old control methods will need to be updated and supplemented. This plan allocates funds each year that may be used for research, including lab testing and computer modelling, and development, including proof of concepts, scalable models, and new equipment purchases.

¹ The addition of Vaseux Lake for summer harvesting, and a pilot for potential future rototilling are being pursued for both environmental and economic reasons.

State of existing assets

Milfoil Assets	Year	Age	MOF Lifespan*	OBWB Lifespan*	Remaining	Accum. Amort.	Replacement Cost	Current Condition
Rototiller - MRV	1990	32	25	35	3	\$0	\$600,000	Good
Rototiller - Red	2004	18	25	35	17	\$0	\$400,000	Good
Rototiller - Blue	1984	38	25	35	N/A	N/A	N/A	Replaced ²
Rototiller - Orange	2017	5	25	35	30	\$340,000	\$400,000	Very Good
Harvester - Long	1978	44	25	35	0	\$7,701.01	\$250,000	Poor
Harvester - Short	1978	44	25	35	0	\$7,701.23	\$250,000	Poor
Shallow-water Cultivator	1997	25	10	30	11	\$10,430	\$40,000	Good
Aluminum Boat w Trailer	1977	45	25	35	0	\$0	\$66,500	Good
Crane Truck	2021	1	10	20	19	\$250,000	\$275,000	New
Boom Truck	1994	28	10	20	N/A	N/A	N/A	Replaced ³
Crane	1985	42	10	20	N/A	N/A	N/A	Replaced
Trailer - Large	2020	2	10	30	28	\$53,570	\$65,000	Very Good
Trailer - Large	2014	8	10	30	22	\$42,560	\$65,000	Very Good
Trailer - Small	1978	44	10	30	N/A	N/A	N/A	Moderate ⁴
Trailer - Small	1978	44	10	30	N/A	N/A	N/A	Moderate
Pickup Truck	2014	8	7	10	2	\$19,029	\$50,000	Good ⁵
Pickup Truck	2021	1	7	8	7	\$42,800	\$50,000	New
Pickup Truck	2021	1	7	8	7	\$42,800	\$50,000	New
Pickup Truck	2021	1	7	8	7	\$42,800	\$50,000	New
OBWB Car	2015	6	7	10	4	\$19,250	\$45,000	Good
Shop Building	2006	16	40	40	24	\$66,182	\$300,000	Very Good

***MOF Lifespan** – BC Ministry of Finance useful life of tangible capital assets (MOF Tangible Capital Asset Procedures).

***OBWB Lifespan** – Estimated useful lifespan within the OBWB milfoil control program.

Replaced in past 5 - year plan (not yet disposed)
Acquired under previous 5 - year plan
To be replaced under current plan

Asset replacement schedule – 5-Years

Replacement Milfoil Assets	Year needed (Starting April 1 st) *	Cost with inflation**	Age at replacement	OBWB Lifespan	Years past lifespan	Lifespan at replacement
Harvester	2023	\$250,000	45	35	10	128%
Harvester	2023	\$250,000	45	35	10	128%
Aluminum Boat with Trailer	2026	\$76,310	49	35	14	140%
OBWB Car	2026	\$51,639	11	10	1	110%
R&D and equipment	Annually (2023 – 2027)	\$50,000	N/A	N/A	N/A	N/A

* Replacement Schedule based on OBWB Lifespan, not on Ministry of Finance Lifespan. **Assumes 3.5% Annual inflation from 2022.

² The Blue rototiller was replaced in 2017 and will be auctioned for disposal.

³ Boom Truck and crane was replaced in 2021 and will be auctioned for disposal.

⁴ These trailers have been replaced, but are still being used on site at the shop for machine storage.

⁵ 2014 Pickup is used as a spare and fitted with a snow plough for shop use.

Milfoil Equipment Reserve Planning

OBWB has made significant progress in asset management and replacement over the last five years. This plan takes into account a 3.5% average annual inflation rate, which should be adjusted for true inflation as part of the annual review. The allocation allows for a predictable tax requisition, which is the goal of this plan.

Equipment Reserve Allocation Table – 3.5% Annual Inflation

Fiscal Year (Starting April 1st)	Equipment Costs Including R&D	Add to Reserve:	Reserve Balance*
2021	N/A	N/A	\$685,562
2022	\$261,630	\$50,000	\$479,932
2023	\$50,000	\$25,000	\$448,932
2024	\$550,000	\$150,000	\$48,932
2025	\$50,000	\$150,000	\$148,932
2026	\$50,000	\$150,000	\$248,932
2027	\$177,949	\$150,000	\$220,983

*Reserve balance is projected forward from actual at year-end for 2021.

Specialized Asset Descriptions

Rototillers

The rototillers are a floating barge powered by a diesel engine, which operates hydraulic pumps. The pumps feed paddlewheels for propulsion, and operate large mechanical arms with a rotating rototiller-style head. The head can be lowered into the water to de-root milfoil from the lake substrate.

MRV

The MRV rototiller is our largest machine at around 6.7 gross tonnes and measuring 10.7m in length and 4.18m in width. Because of the weight and size, the MRV is the only machine in the fleet that requires an external hauler. The MRV is only used in Okanagan Lake, which has launch sites large enough to accommodate it. The current MRV was built in 1990 and has an anticipated lifespan of 35 years.

Rototiller – Blue and Red

The blue and red rototillers are similar, smaller rototillers at around 3.5 gross tonnes and measuring 7.7m in length and just over 3m in width. The Blue and Red rototillers are capable of being used in all Okanagan Lakes with suitable launch sites, and can be transported and launched using internal OBWB equipment. The Blue machine was built in 1984, and the red in 2004. Each has an anticipated lifespan of 35 years.

Shallow-Water Cultivator

The shallow-water cultivator is a tractor with rubber tracks which can be partially submerged in water about 1m deep. The tractor drags an spring-loaded harrow, with arrow-head blades which till the substrate in shallow areas, de-rooting milfoil. This machine was manufactured in 1997, but has had significant recent upgrades. The shallow-water cultivator has an anticipated lifespan of 30 years.

Harvesters

The aquatic weed harvesters are floating-paddlewheel-driven barges which have three conveyor sections. The front conveyor section is mounted on a frame which can be lowered approximately 2m into the water, where reciprocating blades at the front edge and sides cut milfoil below the water. Once cut, the front conveyor lifts the milfoil, allowing water to drain back through the metal belting into the lake. The milfoil is conveyed onto the second conveyor section, in the belly of the machine. This belly conveyor acts as the storage area for cut milfoil, and conveys the load to the final offloading conveyor. The final conveyor lifts the load out of the belly, and can dump a pile of milfoil on dry land for removal by the boom truck. The current harvesters were both manufactured in 1978 and have surpassed their expected lifespan of 35 years.

Haul Truck and Crane

The haul truck is a multi-function flatbed truck with a forward mounted crane. The truck is used to haul the trailers, carrying any of the OBWB machines, except the MRV rototiller. The crane is used to disassemble the paddlewheels from the machines, reducing the width to transport. During milfoil removal from dump sites, a clamshell is fit to the crane, allowing the operator to pick up the pile, and load a container on the truck. The flatbed then tilts at the dump site, allowing the container to offload the milfoil.

Future R&D Equipment

Future equipment to be considered for R&D could include:

- new or re-designed de-rooting processes to mitigate environmental hazards and increase efficacy;
- equipment to assist machine launching operations to overcome lake level constraints;
- equipment to facilitate weed transfer to shore, accounting for increasing constraints;
- processes for reducing biomass volume for shore transfers; and
- others as dictated by emerging technology and technical advice.