

WATER CONSERVATION AND QUALITY IMPROVEMENT GRANT AWARDS – 2023

	Number of Applications	Total Requested	Total Available
Totals	22	\$587,637	\$350,000

Organization	Project	\$ Awarded
Okanagan Nation Alliance	Lower Trout Creek (lower Trout Creek) Restoration Year 2	\$ 10,000.00
Okanagan Nation Alliance	Groundwater – stream exchange on alluvial fans of the Okanagan Valley – Phase 3	\$ 29,000.00
City of Kelowna	Marinas and drinking water intakes on Okanagan Lake: A data-guided assessment of potential effects of a proposed marina in Sutherland Bay on the Poplar Point Intake	\$ 24,000.00
Okanagan Similkameen Stewardship Society	Wetland & Riparian Stewardship in Kelowna	\$ 20,000.00
Mission Creek Restoration Initiative (MCRI)	MCRI Restoration and Effectiveness Monitoring	\$ 25,000.00
Okanagan Nation Alliance	Okanagan Reservoir Operation - Optimization Guidance	\$ 30,000.00
District of Lake Country	Wood Lake - What's at Stake and What We Can do About It?	\$ 25,000.00
Okanagan Collaborative Conservation Program	Establishing the framework for a Water Responsibility Plan	\$ 30,000.00
Chute Creek Stewardship Society	Lower Chute Creek Restoration and Reconstruction	\$ 30,000.00
Town of Spallumcheen	Source Water Quality Sampling in Deep Creek	\$ 20,000.00
Regional District of Central Okanagan	Understanding Groundwater Levels in Woodhaven Nature Conservancy Regional Park	\$ 20,000.00
Armstrong Wetlands Association	Okanagan Street Wetland Enhancement & Education Project	\$ 12,000.00
Regional District of Okanagan-Similkameen	An Agricultural Purveyed Water Education Series	\$ 15,000.00
District of Peachland	Sediment Transport Monitoring Program for Foreshore Flood Mitigation	\$ 25,000.00
Westbank First Nation	Water Conservation	\$ 20,000.00
Town of Oliver	Water Smart Ambassador - Building sustainable futures for community water use in the Town of Oliver and Oliver Irrigation District	\$ 15,000.00
Total		\$ 350,000.00

Project Title:	Lower Trout Creek (lower Trout Creek) Restoration Year 2
Organization:	Okanagan Nation Alliance

Project Goals:	nlux ^w lux ^w lcwix (lower Trout Creek)'s water quality and fish and wildlife habitat are negatively impacted by channelization and confinement. The creek's lower reaches and Okanagan Lake are also heavily impacted by a perpetual slide in the canyon ~7 km from the creek's mouth which contributes a significant amount of fine sediments year-round. The multi-agency Trout Creek Restoration Steering Committee is collaborating to restore the mainstem river and floodplain habitat of the lower 2 km of Trout Creek, in order to reduce the sediment load into Trout Creek's lower 2 km and Okanagan Lake, and restore the self-sustaining, diverse fish and wildlife habitat which once existed in nlux ^w lux ^w lcwix (lower Trout Creek). These habitat restoration efforts complement the District of Summerland's ongoing efforts to mitigate the perpetual slide and primary source of sediment inputs. In 2023, the initiative will work with CLI, ONA Natural Resource Committee, the OKLRPI working group and syilx and non-syilx political leaders to create a common understanding of the issues and actions for a siwłk ^w (Water) Responsibility Plan for kłúsxñitkw and present recommendations to ONA Chief's Executive Council.
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Project Title:	Groundwater – stream exchange on alluvial fans of the Okanagan Valley – Phase 3
Organization:	Okanagan Nation Alliance
Project Goals:	Surface flows across alluvial fans are required for fish to access spawning and rearing habitat at key times throughout the year. In the Okanagan, critical times for fish passage align with natural low flow periods and in the summer and fall, irrigation demand. In many systems, groundwater maintains flow in streams during these low flow periods when precipitation is also low. One critical knowledge gap is the extent of water exchange between surface streams and adjacent groundwater on alluvial fans throughout the Okanagan valley. ONA aims to identify hydraulic connectivity between streams and alluvial aquifers, and, for a select critical creek, estimate the volumes of water exchanged. In the first two phases, ONA has explored the usefulness (and limitations) of various techniques for observing the direction and magnitude of surface water –groundwater exchange across one complete hydrologic year and a second winter period, assessed the role of the streambed in moderating water exchange, and sought guidance from Traditional Ecological Knowledge. Phase 3 of the study will extend observations and analysis to a second complete hydrological year and focus on disseminating findings to and engaging with bands, local, regional, and provincial governments that collectively manage water on alluvial fans in the Okanagan.

Project Title:	Marinas and drinking water intakes on Okanagan Lake: A data-guided assessment of potential effects of a proposed marina in Sutherland Bay on the Poplar Point Intake
Organization:	City of Kelowna
Project Goals:	The City of Kelowna will be undertaking a study to determine if the development of a Sutherland Bay marina poses risks to the Poplar Point Intake. Sutherland Bay was used for log storage for over 80 years. Mill sites impact their adjacent water bodies from accumulated woody debris and from fuels and chemicals used to treat lumber. Marinas are also sources of contaminants including PAHs, metals, and E. coli. Sediments can be disrupted by power boats. Phase 1 includes analyzing Lidar bathymetry, the OBWB-WQDB, existing data for Sutherland Bay plus the mill site, and existing Okanagan studies of marina sediment contamination and compare these findings to published literature. Phase 2 includes a boat trial of sediment disturbance and shoreline erosion in Sutherland Bay, compared to a boat impact study on Kalamalka Lake. It would assess the risks of a marina in Sutherland Bay based on disrupted sediment plumes travelling 2.3 km to Poplar Point Intake, which only has 1m of clearance from the substrates. Phase 3 includes collecting sediment cores from six Okanagan marinas and a control bay for PAH, E. coli, and metals analyses. Bacteria and sediment fall tests would determine how quickly bacteria and sediment settle out of the water column following a boat disturbance. Phase 4 includes preparing a technical report that communicates the study findings in clear language and a drone video. The final goal of this case study is to identify source water

	protection issues caused by marinas on Okanagan mainstem lakes. Actionable solutions will be proposed that could be adopted throughout the Okanagan.
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Project Title:	Wetland & Riparian Stewardship in Kelowna
Organization:	Okanagan and Similkameen Stewardship Society
Project Goals:	<p>The goal of this project is to use existing wetland inventory data to identify and contact owners of wetland features in the Central Okanagan region, specifically in Kelowna, in order to improve management of these resources to benefit water quality. We will also work directly with local government staff to assess specific needs and develop a Best Management Practice Guide and workshop for municipal workers who work in and around wetlands.</p> <p>The project goals include:</p> <ol style="list-style-type: none"> 1. Communicate the value of nature-based solutions in and around wetlands that improve water quality/quantity to landowners and municipal staff. 2. Help residents increase their competency to apply nature-based solutions to solve specific wetland management issues they face. 3. Develop resource materials specifically highlighting best management practices that could be applied by parks/public works staff that benefit wetlands and riparian habitats/species in addition to water quality.

Project Title:	MCRI Restoration and Effectiveness Monitoring
Organization:	Mission Creek Restoration Initiative (MCRI)
Project Goals:	<p>This 2023/24 proposal marks the first year of a new 3-year initiative focussed on delivery of near-term recommendations from the recently released Lower Mission Creek Habitat Conservation and Restoration Plan. This year we will continue monitoring a series of fish/fish habitat parameters to assess habitat quantity and quality, and associated fish use over time, continue monitoring stability and functionality of restoration structures as well as channel conditions according to established flood protection standards and restoration objectives, deliver a restoration project according to location and conceptual design approach recommendations specified by the Plan and continue outreach and communication services to highlight MCRI and supporting organizations, and deliver a Land Securement Strategy to support Plan recommendations.</p>

Project Title:	Okanagan Reservoir Operation - Optimization Guidance
Organization:	Okanagan Nation Alliance
Project Goals:	<p>The operation of storage reservoirs in the Okanagan Basin is critical to the management of surface water. Historically, reservoir management was largely focused on retaining water to support summer irrigation needs; however, reservoir managers now face multiple objectives (sometimes conflicting), ranging from drought and climate change planning to reducing downstream flood impacts and sustaining environmental flow needs (EFNs). This project builds on recommendations outlined in the document entitled Okanagan Dams and Reservoirs – Past, Present, and Future, which identifies the need for collaboration with Indigenous Peoples, local and provincial governments, and reservoir managers to start developing guidance to optimize reservoir operations to meet varying downstream needs. This project will capture current reservoir management strategies, while also identifying steps for maintaining and improving healthy aquatic environments. The information collected will culminate in a general guidance document outlining reservoir management strategies and rules to optimize water releases to meet downstream aquatic and water user needs. The target audience is dam owners and reservoir managers of upland reservoirs (i.e., non-mainstem valley lakes).</p>

Project Title:	Wood Lake - What's at Stake and What We Can do About It?
Organization:	District of Lake Country
Project Goals:	Lakes around the world have undergone significant eutrophication and warming. Lengthier and stronger stratification of the water column leads to increased oxygen depletion and the rise of cyanobacteria at the expense of other phytoplankton groups. This human-caused lake hypoxia has become one of the most pressing issues facing lake ecosystems today. In Wood Lake, the intensity and frequency of cyanobacteria blooms increased since 2010. A lake squeeze occurred in 2011 and nearly occurred in 2022. Hypoxia in Wood Lake causes internal phosphorus loading that accounts for over 95% of the annual bioavailable phosphorus budget. Fortunately, the database on Wood Lake is extensive. Historical lake change answers are also available from the sediment record in Wood Lake. Modeling using all studies and data together with sediment coring is proposed with the intent of providing solutions. Moving Wood Lake toward its former mesotrophic condition will require communities to work together and apply both western knowledge and Syilx traditional knowledge.

Project Title:	Establishing the framework for a siwłk^w (Water) Responsibility Plan
Organization:	OCCP (Okanagan Collaborative Conservation Program)
Project Goals:	The tkłúsxńítkw (Okanagan Lake) Responsibility Planning Initiative (OKLRPI) emerged in response to the Okanagan Lake Foreshore Inventory and Mapping reports that identified large scale loss of natural areas around the lake and has expanded to address cumulative impacts of resource extraction activities in the Okanagan watershed and syilx territory. The initiative is co-led by OCCP, the Okanagan Nation Alliance, the Regional District of Central Okanagan, the BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development, and UBC. In 2023, the coordinating team will work with the Centre for Indigenous Environmental Resources (CIER) on a Collaborative Leadership Initiative (CLI) to strengthen the OKLRPI planning process. The CLI facilitated process will provide additional resources and expertise to bring Indigenous and municipal elected leaders together to examine and co-develop new approaches for land use planning, practices, and decision-making. The coordinating team will also develop a series of workshops with the OKLRPI working group (27 organizations including all levels of government) to continue building knowledge and capacity among the practitioners and regulators who will play a key role in implementing the action.

Project Title:	Lower Chute Creek Restoration and Reconstruction
Organization:	Chute Creek Stewardship Society
Project Goals:	The project objectives are the restoration of the in-stream and riparian ecosystems of lower Chute Creek and the provision of flood protection to the Naramata community of Indian Rock located within Area E of the RDOS. Complimentary objectives are to conserve and expand biodiversity and species at risk (in particular salmon spawning habitat), contribute to improved water quality and quantity, and to inspire and support community stewardship through public engagement and education. The project involves the removal of a concrete flume, expansion of the footprint of Lower Chute Creek and the replacement of the Indian Rock Road Bridge. The flume design creates a natural salmon spawning habitat and calls for the planting of indigenous vegetation. An accessible community viewing area complete with signage in English and nsyilxcən language will provide an educational opportunity for youth and others with interests in developing local nature solutions. At the invitation of their President, a historical record of this project will be displayed and archived at the Naramata Museum.

Project Title:	Source Water Quality Sampling in Deep Creek
Organization:	Township of Spallumcheen
Project Goals:	This project includes collecting water quality and aquatic macroinvertebrate samples at multiple stations along Deep Creek within the Township of Spallumcheen to assess and track stream health. Water quality parameters will be tested at 14 stations along Deep Creek. The location of the samples will help identify nutrient-loading sites and direct rehabilitation prescriptions for each landowner as part of a separate ongoing stream rehabilitation project within the Township of Spallumcheen. There will also be sampling of aquatic macroinvertebrates to quantify the population within Deep Creek. As indicator species, the populations of invertebrates can be used to determine water quality. The water quality and invertebrate sampling results will be combined with previous years' data to reveal trends in ecosystem health and identify areas for rehabilitation in Deep Creek. The improvement of water quality shown in the sampling trends will also prove the success of the completed rehabilitation works

Project Title:	Understanding Groundwater Levels in Woodhaven Nature Conservancy Regional Park
Organization:	Regional District of Central Okanagan
Project Goals:	Woodhaven Nature Conservancy Regional Park has experienced many natural process events over the millennia such as floods, forest fires, and now atmospheric climate change. The RDCO and UBC Okanagan are working to develop a partnership on a four (4) year multi-phased research project at Woodhaven Nature Conservancy Regional Park to look into the future long-term resiliency of the park and to undertake an ecosystem restoration plan to restore the park to its former natural state. In order to develop the restoration plan, the RDCO requires a better understanding of the long-term implications of the historical and existing groundwater levels, fluctuations and water patterns to develop predictive modelling for future groundwater level trends.

Project Title:	Okanagan Street Wetland Enhancement & Education Project
Organization:	Armstrong Wetlands Association
Project Goals:	<p>The City of Armstrong now owns a monoculture cattail wetland at 3185 Okanagan Street in the downtown core. This wetland is approximately 50 years old, was privately owned and farmed for approximately 70 years. Preloading in adjacent areas has resulted in a rising water table. The wetland is fed by groundwater and is adjacent to Meighan Creek. This wetland will be enhanced by creating an open water pond in 2023, having a surface area of approximately 300 m². The water table is approximately 6 cm below ground during the driest time of the year (result of test pit). A pond depth of between 1.5 to 2 m will provide permanent open water and prevent cattail infiltration. Some soil will remain on site by creating one hummock around the pond. The addition of a boardwalk, a viewing platform and educational signage will take in 2024.</p> <p>Goals and Objectives:</p> <ol style="list-style-type: none"> 1. By creating an upland hummock and open water the area will become more biologically/topographically diverse and attract native flora and fauna. 2. Increasing the diversity of riparian vegetation will improve water quality, subsurface flow and groundwater recharge. 3. By creating green infrastructure and removing soil to create a depression this area will be able to hold more water, thereby increasing groundwater retention to prevent flooding during spring freshet. 4. Creating an accessible biodiverse wetland habitat site in the centre of the city will provide an educational opportunity for local schools and the wider community.

Project Title:	An Agricultural Purveyed Water Education Series
Organization:	Regional District of Okanagan-Similkameen

Project Goals:	With increasing drought frequency and severity, it is important for all water users to understand their role in this interconnected system. Recently, the Kootenay Boundary Farmers Association supported the production of a series of videos aimed at improving irrigation efficiency in a changing climate. These videos provided a sound foundation to promote wise irrigation water use. In the Kootenays, however, water is supplied through direct license to water users. Irrigators who have their own water license deal directly with the province regarding water use; as such, they are given greater opportunity to understand the principles governing irrigation water demand and are more motivated to use water efficiently and effectively. In the Okanagan, however, most water is supplied through water purveyors, who hold large water licenses. Irrigators receiving their water from purveyors are quite removed from the details of the Water Sustainability Act and can lose touch with the fundamentals of irrigation water policy, management, and engineering. We propose to fill this information gap by producing an educational video and workshop series tailored specifically for Okanagan irrigators, particularly those using purveyed water. These videos will have utility for an irrigator interested in using water effectively and efficiently but will be particularly relevant to the crops and the varied microclimates of the Okanagan. These resources will provide regionally relevant fundamental knowledge on the critical principles of irrigation water use to help ensure that all life dependent on water gets what it needs.
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Project Title:	Sediment Transport Monitoring Program for Foreshore Flood Mitigation
Organization:	District of Peachland
Project Goals:	The sediment transport monitoring program will evaluate the pre and post construction changes in sediment transport trends due to implementation of the nearshore and foreshore flood mitigation works being constructed in March and April of 2023 to prevent damage to Beach Avenue between 4th Street and 6th Street. The innovative works are intended to reduce longshore sediment transport rates, rebuild the nearshore shelf, and stabilize the foreshore. This will reduce erosion along Beach Avenue and reduce the need to dredge the wheelchair ramp in Swim Bay while naturalizing the shoreline and providing resilience to wave action during flood events. The province has allowed this “experimental” flood mitigation work but requires rigorous monitoring and evaluation of the success and impacts of the works over several years. The results of this monitoring program could enable other municipalities to implement similar naturalized flood mitigation measures if the results are favourable. The mitigation measures will include dredging at the wheelchair ramp for nourishment of the new sediment control structures, bioengineering log and rip rap erosion protection structures with planting, and construction of multiple rock groynes. As part of this project, the district is responsible for sediment monitoring.

Project Title:	Water Conservation
Organization:	Westbank First Nation
Project Goals:	WFN’s 2023 Spring and Summer water conservation initiative aims to bring public awareness of household and commercial water usage with the intended goal of lowering water demand during peak season, for the purposes of minimizing operating costs, reducing unnecessary water usage, and ensuring consistent potable water for residents during emergency and firefighting operations. Project includes: <ol style="list-style-type: none"> 1. Using historical data, identify households with above average water use. 2. Identify and purchase easy to use, quality, and cost-effective hose bibb irrigation timers. 3. Contact high water use households and inquire about setting up a time to install and program the hose bibb timers and educate the homeowner on water usage. 4. Monitor water usage for April -July and compare usage to historical trends. 5. Prepare a report on the success and challenges the campaign faced and make recommendations for the following year.

Project Title:	Water Smart Ambassador - Building sustainable futures for community water use in the Town of Oliver and Oliver Irrigation District (year 2)
Organization:	Town of Oliver
Project Goals:	<p>Like all communities in the Okanagan Basin, Oliver is faced with the rising costs of water treatment and distribution, a widening infrastructure gap, and a changing climate that brings more extreme weather events. In response to these challenges, last year the Town of Oliver with the support of the WCQI Grant Program hired a Water Smart Ambassador. In 2022 this position not only met its goals but exceeded them. In 2023 we seek to continue this position and its successful initiatives started last year. As well as tackling new projects to increase awareness of water conservation valley wide and reduce our Town's water consumption.</p> <p>In 2023 the Water Smart Ambassador will among others:</p> <ul style="list-style-type: none"> - Continue direct communication of water conservation information, upcoming events both in person and virtually - Expand and improve the Town of Oliver subsidized rain barrel sale. - Implement rebates for efficient irrigation systems, efficient gardening practices, and low water appliances - Research, study and recommend new water conservation measures in consideration of the 2022 updated Water Conservation Plan, information published by the OBWB, and measures taken by other communities - Plan and execute community engagement activities - Pending the approval of the submitted Natural Infrastructure Fund Grant, continue work on the South Okanagan Xeriscape Garden project - Update and expand the water conservation section of the Town of Oliver website.