

Tri-County Water Treatment Plant

(6-Year Recommended Capital/Major Maintenance from 2021 to 2026)
The Ontario Clean Water Agency has identified the following capital projects/major maintenance for your review and approval.

Ref.		Cost Estimate						Compliance	DWQMS RA Outcome*	Health & Safety	Repair / Maintenance	Lifecycle Replacement	Improvement	Spare Parts Inventory	Approved by Client	Rationale for Project
		2021	2022	2023	2024	2025	2026									
	Treatment Plant															
1	Main Hydro Transformer: undersized and requires upgrading	\$ 50,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									The main transformer has been identified as undersized and requires upgrading to a larger transformer. Waiting on hydro one study and plant power study before determining a final plan.
2	Intake structure Inspection	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Last inspected in 2016. Recommended for inspection every five years.
3	Strainers: Purchase of critical spare parts	\$ 12,500.00	\$ -	\$ -	\$ -	\$ -	\$ -									Currently there are no critical spare parts in stock inventory. Recommend to develop spare parts inventory.
4	pH Control System (Pilot project)	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00	\$ 11,000.00									Pilot study commenced in Spring 2018. Annual cost for operation of pH control system.
5	Eramosa: SCADA Condition Study	\$ 17,500.00	\$ -	\$ -	\$ -	\$ -	\$ -									Condition study which will be used to develop the long term capital needs of maintaining all of the PLC's hardware/software at all Tri-County sites.
6	Smart positioners: Spare parts inventory	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00									Critical component for filter operation. Continue to ensure there are spare parts at all times for continuity of operations.
7	Pneumatic actuators	\$ -	\$ -	\$ 3,000.00	\$ -	\$ -	\$ 3,000.00									96 actuators throughout the plant. Three different sizes.
8	Rack butterfly valves	\$ -	\$ 2,000.00	\$ -	\$ -	\$ -	\$ 2,000.00									Continue to increase spare parts inventory, multiple sizes required.
9	Lowlift: PLC UPS replacement	\$ 5,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Requires replacement for hard wired PLC UPS in PLC cabinet.
10	Inplant process motors/pumps	\$ 5,000.00	\$ -	\$ -	\$ -	\$ 5,000.00	\$ -									Placeholder for process pumps.
11	Chemical Transfer pump replacement	\$ 4,000.00	\$ -	\$ 4,000.00	\$ -	\$ -	\$ -									4 chemical transfer pumps which are replaced every 4-5 years.
12	Chlorine and Peroxide feed pumps	\$ 6,000.00	\$ 6,000.00	\$ 6,000.00	\$ -	\$ -	\$ -									Currently one spare chlorine pump in stock inventory and no peroxide spare pumps. Original chlorine pumps are still in service.
13	Chlorine Analyzer pH probes and cl2 probes	\$ 6,500.00	\$ 6,500.00	\$ 6,500.00	\$ 6,500.00	\$ 6,500.00	\$ 6,500.00									pH probes should be replaced every 6-12 months and chlorine probes every 2-3 years. 7 online analyzers in plant.
14	Chlorine Gas Building: chemical feed system service and overhaul of lifecycle components	\$ 10,000.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00									Recommend in 2021 to conduct a general rebuild on the chlorine gas system and to replace the aging gas cylinder scales. Includes, valves, piping etc.
15	UV system Reactors: Reactor 1 and 2 lamps	\$ 15,000.00	\$ 15,000.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00	\$ 2,500.00									Requires full replcaement of lamps in each reactor starting with one in 2021 and the second in 2022.
16	Storage Tank Inspections	\$ -	\$ -	\$ -	\$ 10,000.00	\$ -	\$ -									Recommended every five years, last inspected 2014. There are funds in 2019 to be completed by Dec. 31, 2019.
17	Storage north tank: insect screen and insulated manway box	\$ 7,500.00	\$ -	\$ -	\$ -	\$ 20,000.00	\$ -									Insulated cover has deteriorated and broken down and no longer protects the manway access. Also requires insect screen on vent. Both requires replacement in 2021. For 2025, interior sealing required as per 2019 report.
18	Storage south tank: insect screen and insulated manway box	\$ 7,500.00	\$ -	\$ -	\$ -	\$ 20,000.00	\$ -									Insulated cover has deteriorated and broken down and no longer protects the manway access. Also requires insect screen on vent. Both requires replacement in 2021. For 2025, interior sealing required as per 2019 report.
19	Air Manifold card replacement and air lines - 4 year cycle	\$ 7,500.00	\$ 7,500.00	\$ 7,500.00	\$ -	\$ -	\$ -									Air cards and air lines should be replaced on filters 1 through 4, over a 4 year cycle starting in 2020. filter rack was done in 2020. recommend filter 2 in 2021.
20	Chemical Room: Pipe and hanger replacement	\$ 20,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Rusting heavily from chemicals .
21	Naturalized Ponds: Removal of Phragmites	\$ 30,000.00	\$ 30,000.00	\$ -	\$ -	\$ -	\$ -									Phragmites is an invasive species and is encroaching around and into the naturalized ponds and requires attention.
22	Chubb Security Panel: replacement required	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									The sediment tanks at the treatment plant and lowlift require to be cleaned and sediment removed every 4-5 years.
23	Pall Filters: optimization study	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Recommend to undertake optimization study by Pall to determine options to reduce organics prior to filtration system or possible options to upgrade filters that can handle organics to reduce THM's.
24	Pall Filters: annual service/PLC upgrades/software	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00									Recommend for Board consideration to implement annual servicing agreement with Pall to undertake inspection/review programming and check overall health of filter performance starting in 2021.
25	Pall: Computer hardware/software and License upgrades	\$30,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Recommend to upgrade and replace the aging computer hardware and software and licence for the Pall computer system.
26	PALL membranes	\$ -	\$ -	\$ 300,000.00	\$ 300,000.00	\$ 300,000.00	\$ 300,000.00									352 modules within plant, installed in 2008. Purchase spare modules for inventory in 2020 and possible replacement starting in 2023 for all filter modules.
Total Estimate - Recommended Capital		\$299,000	\$99,500	\$362,000	\$351,500	\$386,500	\$346,500									

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Ref.	No.	Scope of Work	Cost Estimate						Compliance	DWQMS RA Outcome*	Health & Safety	Repair / Maintenance	Lifecycle Replacement	Improvement	Spare Parts Inventory	Approved by Client	Rationale for Project
			2021	2022	2023	2024	2025	2026									
		Highlift and Lowlift Pumps & Motors															
1		Lowlift motor: rebuilds/replacement	\$ 10,000.00	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -									New Premium efficiency motors. Rebuild/replace motors 2,3,4 starting in 2020. Motor 1 was replaced in 2018 due to failure. Pump 3 motor was refurbished in 2020. Recommend to continue with rebuild of motor on pump 2 or 4 in 2021.
2		Lowlift pump: inspection/refurbishment	\$ 15,000.00	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -									Removal/inspection/refurbishment on pumps 2,3,4 starting in 2020. Pump 1 was refurbished in 2018 when the motor was replaced. Pump 3 was rebuilt in 2020 as part of upgrade for new VFD. Recommend to pull/inspect/rebuild pump 2 or 4 in 2021.
3		Lowlift motors: replacement of soft starters With Variable Frequency Drive's	\$ 18,000.00	\$ 18,000.00	\$ 18,000.00	\$ -	\$ -	\$ -									Lowlift soft starter drives are nearing the end of their lifecycle. This asset has a typical life expectancy of 7-10 years. Pump 3 soft start was replaced and upgraded to a VFD. Recommend to replace pump 1 with a VFD as well in 2021.
4		Highlift pump: replacement of soft starters and VFD's	\$ 35,000.00	\$ 20,000.00	\$ 20,000.00	\$ -	\$ -	\$ -									Recommend to replace existing soft starter to VFD on pump 3 in 2021 and replace soft starters with like for like on pump 1 in 2022 and pump 3 in 2023.
5		Highlift pump and motor: Rebuild	\$ 15,000.00	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -									Pump 1 scheduled for 2021 and pump 2 for 2022. Pump 4 and motor was rebuilt last in 2019 and a VFD installed. Due to failure on pump 3, it requires to be rebuilt in the fall of 2020.
		Total Estimate - Recommended Capital	\$93,000	\$78,000	\$38,000	\$0	\$0	\$0									
		Structural includes: (piping/control or PRV valves/building envelope/HVAC/ plant chambers)															
1		Raw wetwell maintenance/repairs/upgrades	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00									Annual allotment for clean out of screen and pump wells.
2		Treatment Plant and Lowlift Settling Tanks: Sediment removal	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ 15,000.00									The sediment tanks at the treatment plant and lowlift require to be cleaned approximately every 3 years. Last cleaned in summer of 2020.
3		Lowlift: Long line valve replacement	\$ -	\$ 40,000.00	\$ -	\$ -	\$ -	\$ -									The valve located in the long line pipe intake is leaking into the valve chamber and requires repairs. This should be addressed in 2021.
4		Highlift Discharge Header: Replacement of Ross PRV	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Recommend to replace the existing dsicharge header ross PRV in 2021.
5		Treatment Plant Heating/AC/dehumidification system	\$ 7,500.00	\$ 75,000.00	\$ -	\$ -	\$ -	\$ -									In 2022, the main plant heating and cooling system will be app. 13 years old and nearing its end of lifecycle. For 2021, the Hydronic boilers – upgrade to proper exhaust pipe as it is getting brittle due to the temps. Also the boiler control system should be looked at as both boilers are left on high fire 24hrs per day 7 days per week.
6		Old Treatment Plant: (IRC BCA Recommendation)	\$ 8,000.00	\$ 14,000.00	\$ 22,500.00	\$ -	\$ 5,000.00	\$ -									Recommend in 2021 to undertake a mould assessment study on office space and a feasibility study to abandon certain components of the old water treatment plant. If building to be maintained, recommend for replacement of windows in 2022 and flooring on second floor in 2023. Placeholder for exterior door replacement in 2025.
7		Lowlift Pump House: (IRC BCA Recommendation)	\$ -	\$ 16,000.00	\$ 42,500.00	\$ -	\$ 5,000.00	\$ 5,000.00									Requires replacement of leaking skylight in 2022, and conduct ventilation study to determine if current system can actually ventilate properly. Recommend for replacement of the roof in 2023 and all exterior doors in 2025 and placeholder in 2026 for skylights.
8		Chlorine gas building: (IRC BCA Recommendation)	\$ 15,000.00	\$ 1,000.00	\$ -	\$ -	\$ 20,000.00	\$ -									Recommend to replace old piping and rehabilitate foundation wall in basement in 2021, and placeholder for heater maintenance/replacement in 2022. For 2025, recommend to install waterproof roof membrane over existing roof and to replace the door.
9		Lowlift Access: milling and overlay of existing asphalt (IRC BCA Recommendation)	\$ -	\$ -	\$ 75,000.00	\$ 75,000.00	\$ 75,000.00	\$ -									IRC recommends for the milling of existing driveway to lowlift. Phased in approach over 3 year period starting in 2023.
10		Retaining Wall: Repairs to retaining wall just south of lowlift (IRC BCA Recommendation)					\$ 75,000.00										IRC recommends to undertake repairs to slumping unsupported retaining wall near the lowlift to ensure property is protected from water damage from Lake Erie.
11		Lowlift Facilities: undertake review of 2020 IRC condition assessment and update	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,000.00									Recommend to conduct a review and updating of 2020 condition assessment completed by IRC.
12		Treatment Plant: Condition assesment	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Conduct inspection of water treatment plant similar to one completed on lowlift in 2020.
13		Lowlift: chemical receiving platform and ram modifications	\$ 25,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Recommend to undertake a review and upgrade the chemical receiving platform and possible ramp for chlorine gas.
14		Discharge Header: Repairing/ replacing stainless pipe	\$ 40,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									Highlift discharge pipe has issues with stainless steel piping. Recommend to replace entire discharge header over two year period.

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		2021	2022	2023	2024	2025	2026									
No.	Scope of Work															
	Total Estimate - Recommended Capital	\$125,500	\$156,000	\$165,000	\$85,000	\$190,000	\$40,000									
	Standpipe and Transmission Main (remote chambers)															
1	Altitude valve replace/ rebuild	\$ 6,500.00	\$ -	\$ -	\$ -	\$ -	\$ -									Recommend to rebuild in 2021.
2	Eagle East: replacement of 12-inch valves	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									The existing valves located in the Eagle east metering chamber do not hold and are recommended to be replaced in 2021.
3	Remote Chamber Refurbishment: (Eagle West/Silverclay/Marsh/Pioneer)	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ -	\$ -									Recommend for upgrading and refurbishing components at the remote site chambers. Work includes upgrading hardware/software in the PLC and programming, cabinet work lighting and heating, inspecting all electrical components. Silverclay work completed in 2020 and recommend Marsh Line in 2021.
4	Marsh Line Chamber: Installation of Sample Station	\$ -	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -									This chamber doesn't have a sample station. The installation of a sample station provides the Operating Authority with an additional location to obtain bacti samples
5	West Lorne Standpipe: Inspection	\$ -	\$ -	\$ -	\$ -	\$ 12,000.00	\$ -									Internal inspection scheduled for November 2020. OCWA recommends that in 2025 to undertake an internal and external inspection.
6	West Lorne Standpipe: Inspection of cathodic protection system	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -									
7	Eagle West: Installation of Sample Station	\$ -	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -									The chamber doesn't have a sample station. The installation of a sample station provides the Operating Authority with an additional location to obtain bacti samples
	Total Estimate - Recommended Capital	\$51,500	\$45,000	\$25,000	\$25,000	\$12,000	\$0									
	Contingency 5%	\$28,450	\$18,925	\$29,500	\$23,075	\$29,425	\$19,325									
	Total Capital Estimate without contingency	\$569,000	\$378,500	\$590,000	\$461,500	\$588,500	\$386,500									
	Total Capital Estimate with 5% contingency	\$597,450	\$397,425	\$619,500	\$484,575	\$617,925	\$405,825									

2021 Recommended Capital Presented by:

2021 Recommended Capital Approved by:

Mike Taylor

Dale LeBritton

* NOTE : a requirement of DWQMS v. 2.0 is to consider the outcomes of the risk assessment (RA) documented under Element 8 as part of the system's infrastructure review

Legend:

H

High priority recommended to be completed in upcoming year

M

Medium priority recommended to be completed in 1 to 3 years

L

Low priority recommended to be completed in years 4 to 5