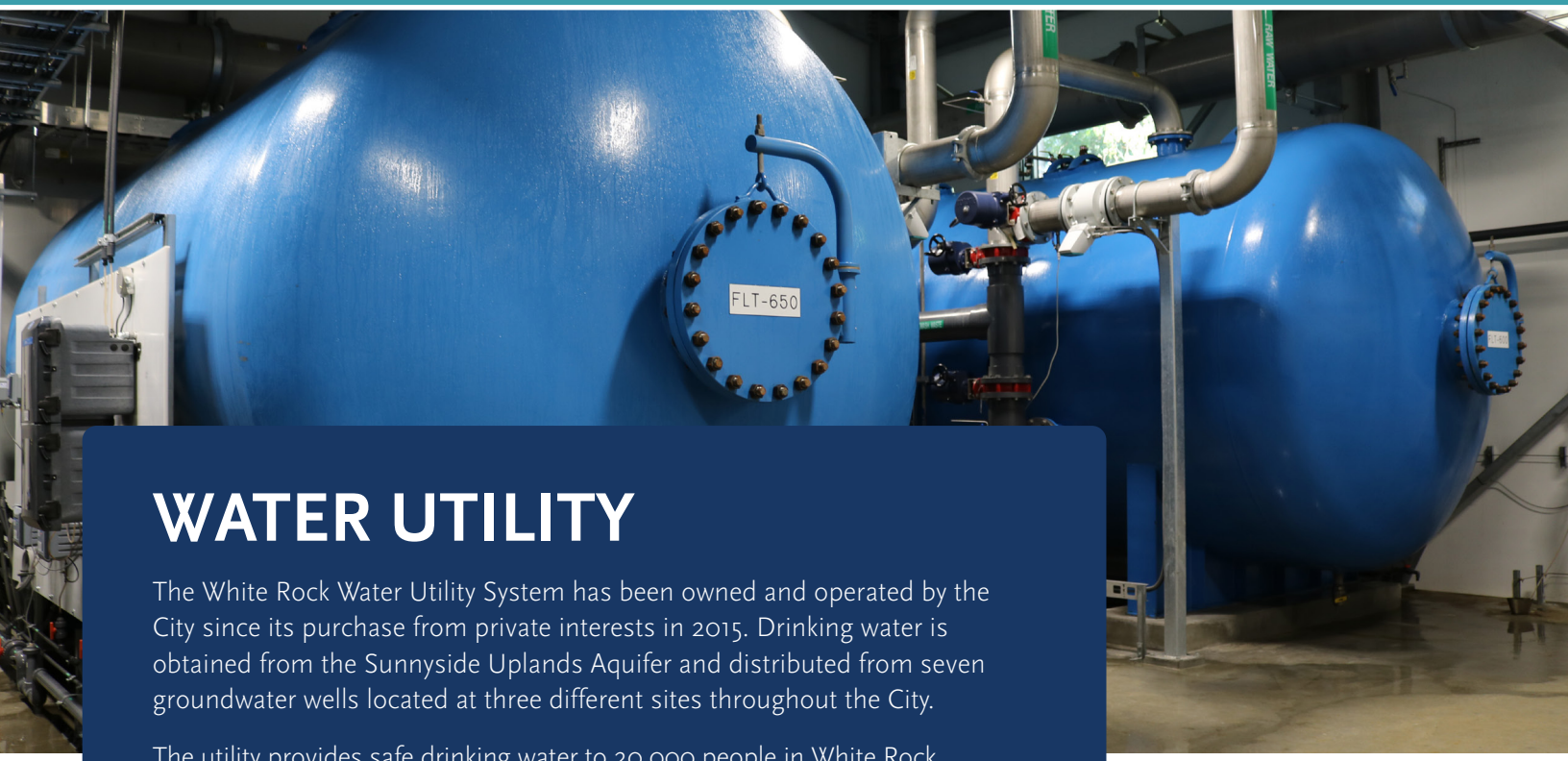


WATER UTILITY

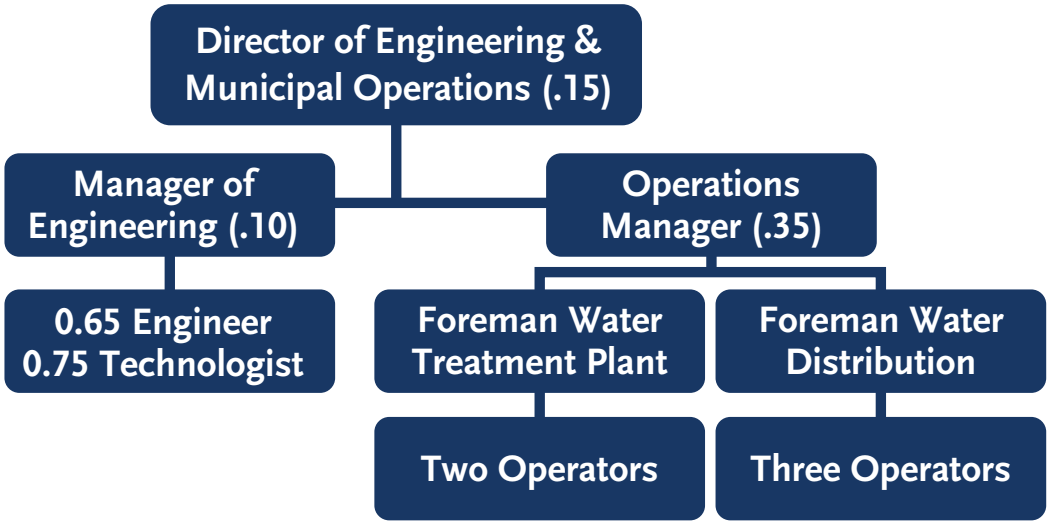
The White Rock Water Utility System has been owned and operated by the City since its purchase from private interests in 2015. Drinking water is obtained from the Sunnyside Uplands Aquifer and distributed from seven groundwater wells located at three different sites throughout the City.

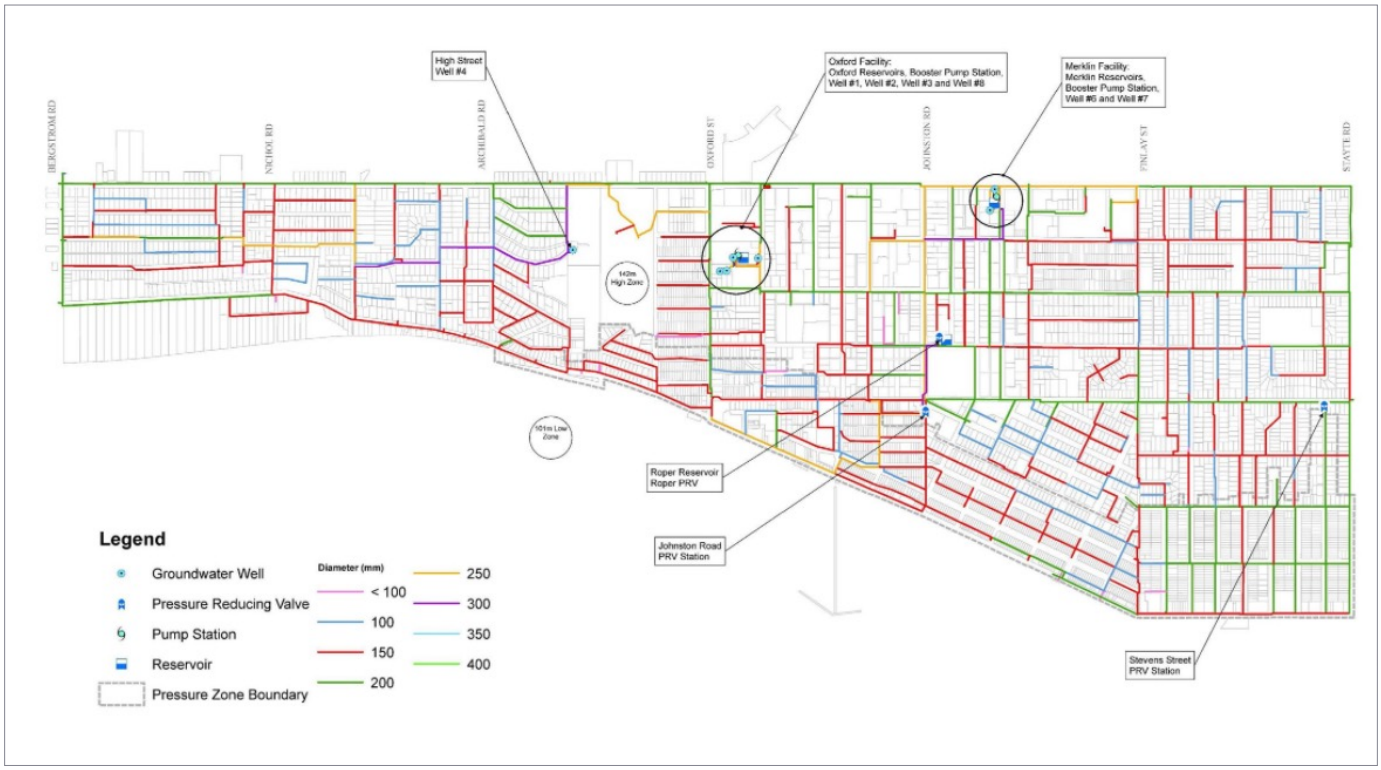
The utility provides safe drinking water to 20,000 people in White Rock, portions of Surrey, and the Semiahmoo First Nation for domestic, commercial and emergency use, meeting firefighting standards, health standards, and the Drinking Water Protection Act.

System infrastructure includes:

- 7 groundwater wells
- 4 reservoirs (Roper, Oxford, and two at Merklin)
- 1 water treatment plant
- 77 km water main network
- 2 Merklin and Oxford booster stations
- 3 Pressure reducing valve stations (Roper, Johnstone and Stevens)
- Over 4500 metered properties
- 179 hydrants for firefighting.

The White Rock Water Utility System is led by the senior staff of the Engineering Department, operated by Foremen for both the operations and treatment, as well as five additional operators who oversee the system on a 24/7 basis. Engineering support is provided by a .65fte Project Engineer, and a .75fte Engineering Technologist. Finance support is provided by a Water Utility Billing Clerk with Corporate support provided by Finance, Human Resources, and Information Technology.


Director of Engineering & Municipal Operations (.15)
Manager of Engineering (.10)
Operations Manager (.35)
0.65 Engineer
0.75 Technologist
Foreman Water Treatment Plant
Foreman Water Distribution
Two Operators
Three Operators


High Street Well #4
Oxford Facility: Oxford Reservoirs, Booster Pump Station, Well #1, Well #2, Well #3 and Well #8
Merklin Facility: Merklin Reservoirs, Booster Pump Station, Well #5 and Well #7
Roper Reservoir Roper PRV
Johnston Road PRV Station
Stevens Street PRV Station
Legend
Groundwater Well
Pressure Reducing Valve
Pump Station
Reservoir
Pressure Zone Boundary
Diameter (mm)
< 100
100
150
200
250
300
350
400

2021 KEY INDICATORS

- White Rock Water Utility delivered a projected 2,000,000 cm of portable water
- Both wells and the reservoir were inspected, maintained, and the treatment plant continued to operate within Public health Standards
- 77 kilometers of water mains were flushed during the year and 11 breaks repaired
- No significant noncompliance events were reported
- Hydrant, valve maintenance, and exercising programs continued
- Meter reading was completed on time
- Treatment plant produced high quality drinking water

Maintenance projections for 2022 are consistent with previous years, resulting in no significant changes expected as a result.

Water Utility						
Key Activity Levels		**2018 Actual**	**2019 Actual**	**2020 Actual**	**2021 Projected**	**2022 Forecast**
Operations Employees		5	6	6	7	7
Storage Capacity	Litres	6,019,901	6,019,901	6,019,901	6,019,901	6,019,901
Water delivered	Cubic Meters	1,672,060	1,724,618	1,917,055	2,000,000	2,000,000
Wells	Inspected & Maintained	Monthly	Monthly	Monthly	Monthly	Monthly
Reservoir	Inspected & Maintained	Monthly	Monthly	Monthly	Monthly	Monthly
Treatment Plant	Inspected & Maintained	Daily	Daily	Daily	Daily	Daily
Water Mains	Kilometers Flushed	77	77	77	77	77
Water Mains	Breaks Repaired	6	9	10	11	10
Pump Stations (2 Stations)	Cleaned & Inspected	Daily	Daily	Daily	Daily	Daily
PRV	Maintained	4	4	4	4	4
Water Services	New Installations	73	41	36	40	40
Meter	Replaced	99	92	127	123	120
Meter	Read	4534	4534	4536	4537	4537
Hydrants	Installed	4	4	4	4	4
Hydrants	Class A & B Serviced	348	350	177	179	179

Water Utility						
Service Plan		**2018 Actual**	**2019 Actual**	**2020 Actual**	**2021 Projected**	**2022 Forecast**
Water Quality Non-Compliance Events	Events Days	1 Metals	2 Micro	3 Micro	1 Micro	1 Micro
Low Water Pressure Complaints	Complaints Days	24	34	18	12	12
Meter reading on time	3 Per Year	100%	100%	100%	100%	100%
Value Exercising	Annual	100%	100%	100%	100%	100%
Hydrant Exercising	Annual	100%	100%	100%	100%	100%
Service connection breaks	Per year	5	3	6	5	5

2021 HIGHLIGHTS AND ACCOMPLISHMENTS

Water Main Capital Works:

Replaced undersized cast iron (CI) pipe at locations subject to premature corrosion and leaks. Additional fire hydrants were installed to meet current standards:

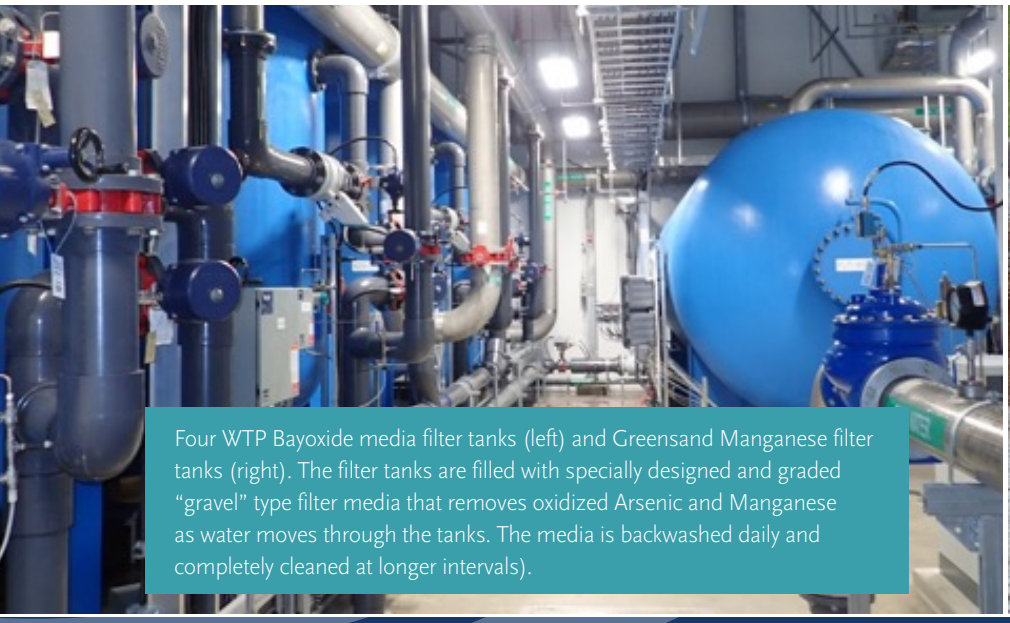
- 1500 block of Chestnut Street replaced 135m of 100mm CI pipe with 150mm Ductile Iron (DI). Installed radio read water meters (image below).
- 1500 block of Stevens Street replaced 195m of 100mm CI pipe with 150mm DI installed radio-read water meters.

Oxford/Prospect Water Tie-ins:

The 100mm cast iron pipe on Prospect Avenue and McDonald Avenue was tied-in to the 200mm pipe on Oxford to improve area fire flow.

Water Treatment Plant:

Regeneration of the filter media was completed to extend the filter life beyond forecast 2022 replacement to defer the media replacement and save funds.



Four WTP Bayoxide media filter tanks (left) and Greensand Manganese filter tanks (right). The filter tanks are filled with specially designed and graded "gravel" type filter media that removes oxidized Arsenic and Manganese as water moves through the tanks. The media is backwashed daily and completely cleaned at longer intervals).

PLANS FOR 2022

1. **New Well:** A New well #5 is proposed to replace the decommissioned well #5. During summer heat spells the well demand approaches current capacity. The scope of the work includes; well-siting study, drilling, supportive infrastructure installation, and SCADA controls.
2. **North Bluff Road:** Oxford to Everall New Pipe: This pipe segment provides main distribution to the west side of White Rock. The City of Surrey is also proposing to realign the intersection at 16th Ave and Oxford. Work would be coordinated between the two cities in order to replace the 200mm Cast Iron water main with a 250mm ductile iron pipe.
3. **Water Master Plan Update:** The 2017 Water Master Plan will be updated by consultants who will review upgrades made over the past five years.
4. **Well Controller Upgrades:** Controller upgrade adjusts to the pressure change when the treatment plant stops pumping to Merklin reservoir, thereby reducing motor wear and tear while extending service life.
5. **Well Upgrades:** Refresh one well system as part of an ongoing 5-year refresh and capacity management program.

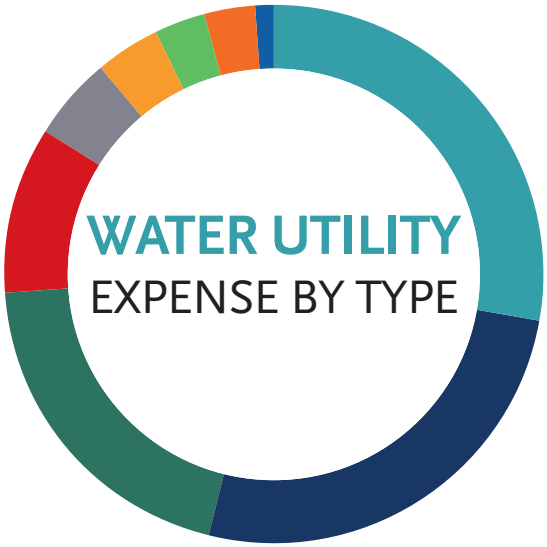
LOOKING AHEAD: 2023 TO 2026

We will strive to maintain focus on the supply-side upgrades in order to ensure reliable provision of drinking water. We will continue the long-range program to replace aged cast iron pipe ahead of large-scale pipe failures.

Replacement of the Bayoxide filter media at the Treatment Plant may be deferred beyond 2022 as a result of the refresh cycle that was recently completed. Manganese filter media is planned for replacement in 2029.

BUDGET SUMMARY

Each year, water rates are established by the City through bylaw, and based on the City's Five-Year Financial Plan for the water system. This includes: forecasted revenues and expenses capital requirements, as well as reserves and debt financing.



- 28% Transfer to Reserves
- 26% Labour
- 20% Debt
- 10% Materials
- 5% Maintenance
- 4% Utilities
- 3% Office
- 3% Contingency
- 1% Equipment

Water user fee revenues are projected to increase by an average of 6.5% annually over the next five years, primarily to build capital reserves necessary to address future infrastructure replacement needs. They also fund operating costs driven by water treatment filtration expenses and purchase of the Utility through debt financing.

The 2022 revenue increase is projected to be 6.5% and is needed for:

Water Operations ($68,100)	1.2%
Transfer to Capital Reserves for Asset Improvement Program ($296,300)	5.3%
Total	**6.5%**

A new water user fee rate structure will be phased in over the next four years to align water consumption with water utility costs, and promote water conservation. Once complete (year four), the City will charge a smaller fixed fee related to the size of the meter, with water consumption billed at the same rate. For the first year of this restructured process the annual cost to a single-family residential property (2238 cubic feet) is proposed to increase by 2% or from $705 to $719 as follows:

	2021	2022
Fixed Charge	$576	$460
User fee	129	259
Total	**$705**	**$719**

For a multi-family home (990 cubic feet) the proposed increased annual cost would be 5.6% ($247 - $261—up by $14). This will vary depending on actual consumption.

City of White Rock - Water Operating Budget								
Funding	**2019 Actuals**	**2020 Actuals**	**2021 Projected**	**2021 Budget**	**2022 Budget**	**Change $**	**Change %**	
Water User Fees	$ 4,945,865	$ 5,323,314	$ 5,780,500	$ 5,605,500	5,969,900	$ 364,400	6.5%	*1
Connection Fees	$ 228,955	$ 182,572	$ 290,000	$ 300,000	300,000	-	0.0%	
Other	129,393	140,620	184,100	166,900	180,800	13,900	8.3%	*2
Operating Reserves	552,200	413,464	141,300	141,300	481,500	340,200	240.8%	*3
Total Funding	**$ 5,856,413**	**$6,059,970**	**$6,395,900**	**$ 6,213,700**	**$6,932,200**	**$ 718,500**	**11.6%**	
Operating Expenses								
Engineering Administration	$ 459,331	$ 409,786	$ 378,700	$ 362,600	$ 383,100	$ 20,500	5.7%	*4
Corporate Support	$ 490,103	$ 608,344	$ 645,478	$ 663,600	$ 713,000	$ 49,400	7.4%	*5
Waterworks	1,362,754	1,246,851	1,517,250	1,576,900	1,922,700	345,800	21.9%	*6
Facilities	285,230	344,704	335,500	333,800	336,000	2,200	0.7%	
Contingency	-	-	-	244,400	225,900	(18,500)	-7.6%	
Debt Charges	1,347,395	1,368,858	1,391,100	1,391,100	1,414,000	22,900	1.6%	
Transfer to Operating Reserve	399,516	511,707	398,300	298,300	298,200	(100)	0.0%	
Transfer to Capital Reserves	1,512,084	1,569,720	1,729,572	1,343,000	1,639,300	296,300	22.1%	*7
Total Operating Expenses	**$ 5,856,413**	**$6,059,970**	**$6,395,900**	**$ 6,213,700**	**$6,932,200**	**$ 718,500**	**11.6%**	
Net	$ -	$ -	$ -	$ -	$ -			

The 2022 proposed budget balances $6.9 million of revenues with $6.9 million of costs.

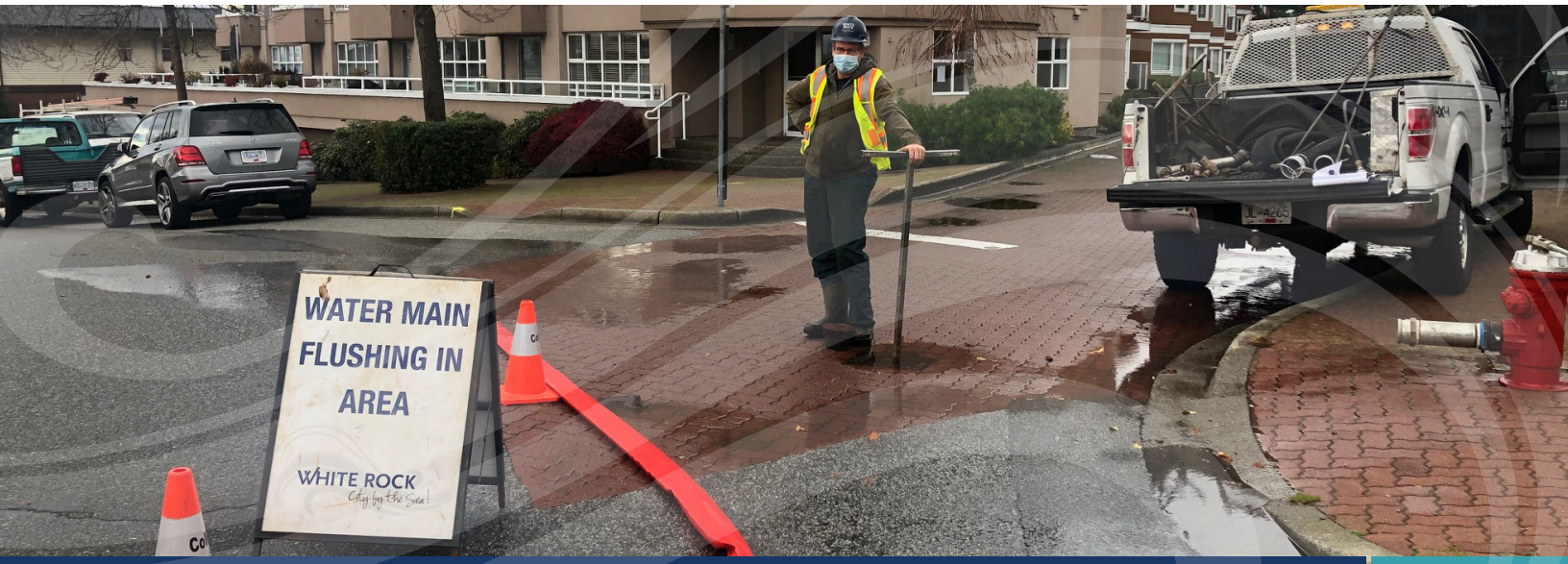
Operating Revenues:

1. Water user fee revenues of 5.97 million is based a water user fee rate increase, reductions in the minimum charge and consumption by meter size using consumption experienced in 2020. This will generate an extra $364,400 or 6.5% in water user fee revenues.
2. Other income includes actuarial gains on debt, water user-fee penalties, and service charges.
3. Operating Reserves will be used to fund a $471,000 contingency for the Bayoxide media replacement at the treatment plant which may be required by 2022.

Operating Expenses:

The Water Utility's main operating expenses relate to staffing, materials and supplies, contract maintenance, long-term debt interest, and transfers to reserves for future infrastructure replacement. Increases in overall operating cost have been kept at a minimum for 2022.

4. Engineering Administrative costs are forecast to increase by 5.7% from wage and benefits, inflation, and the recent restructure.
5. Corporate Support costs have increased by 7.4% from inflation, but primarily from an increase to the corporate support fee charged to the water fund which is gradually being increased to 100% of actual costs.
6. Waterworks costs have increased for one year to provide the $471,000 contingency for Bayoxide media replacement at the Treatment Plant, funded by the operations reserve that is built up by $167,000 annually to account for media consumption every 3 years during the treatment process. Cost will return to standard levels in 2023.
7. Transfer to Capital Reserves are forecast to increase by $296,300, consistent with the long-term plan to increase funding for infrastructure replacement. This is equivalent to 5.3% of the user fee increase for 2022.
8. At this time, there are no additional operational budget requests, projects or initiatives requiring funding.



Debt:
Debt financing costs to fund the purchase of the utility vary slightly from year to year from actuarial adjustments. 2021 saw no additional borrowing and repayments will continue to reduce the principal to $18.0M by 2026.

Reserves:
Operating Reserves have been established for three functions:

- Working Capital Reserve - providing a foundation for operations
- Water Operating Reserve - providing a buffer for year-over-year water rate fluctuations.
- Water Treatment Reserve - smooths out the costs of media replacement at the treatment plant

Capital Reserves are established for the replacement of infrastructure with the goal of maintaining balances equivalent to between 5% and 10% of the water assets replacement value. The current asset replacement value is estimated to be $138 million, which would require a reserve balance of between $6.9 and $13.8 million to be maintained. Reserves are projected to remain between $3.1 million (2.3%) and $2.2 million (1.6%). This is well below optimum levels forecast to cover the next five years, and why water rate increases for future infrastructure replacement are required.

2021 to 2025 Reserves Scorecard

	Balance 2021	Balance 2022	Balance 2023	Balance 2024	Balance 2025	Balance 2026	Status 2021	Status 2026
WORKING CAPITAL								
Operating (Accumulated) Surplus	993,200	993,200	993,200	993,200	993,200	993,200	Good	Good
OPERATIONS (Reserve Accounts)								
Water Operating Reserve	419,100	458,600	508,600	558,600	608,600	658,600	Low	Low
Water Treatment Reserve	399,500	100,500	291,500	482,500	175,500	366,500	Good	Good
CAPITAL and DEBT (Statutory Reserves)								
Vehicles and Equipment Replacement	154,800	112,300	152,600	193,700	235,600	278,300	Good	Good
Water Infrastructure	2,991,200	1,779,500	2,339,100	1,474,500	1,121,400	1,969,600	Low	Low
Development Cost Charges	1,370,500	1,462,800	1,567,100	1,673,500	1,771,900	1,788,400	Good	Good
Debt Retirement	24,100	24,100	24,100	24,100	24,100	24,100	Good	Good
OVERALL RESERVES	**5,359,200**	**3,937,800**	**4,883,000**	**4,406,900**	**3,937,100**	**5,085,500**		
Capital Reserves Target (5% to 10%)	2.3%	1.4%	1.8%	1.2%	1.0%	1.6%		

ASSET IMPROVEMENT PROGRAM – WATER UTILITY

Over the next five years, the Water Utility plans to spend $13.7 million to replace water mains, wells, valves, and equipment. This is primarily funded from Water Infrastructure and Equipment Replacement Reserves. Annual spending ranges between $1.5 million and $3.4 million per year.

Guided by the 2017 Water Master Plan, the capital program provides for replacements of end of life city water mains, associated trench restoration, and provides for additional work necessary to meet population growth as well as equipment upgrades.

The program also provides for the renewal and replacement of water wells, reservoir components, and treatment facilities, and includes provision for the assessment of the network for system optimization and prioritization of improvements.

The capital program is primarily funded through reserves set aside each year from water sales to the community, supplemented by a small amount of developer contributions.

Costs are estimated at the Class 'D' level for budget purposes, using a variety of local construction cost information, as well as experience and supplier information. As projects are designed, the cost estimates are refined and vetted through the purchasing process. Large projects valued at $250,000 or more are confirmed with Council prior to the purchasing process.

City of White Rock	2021	2022	2023	2024	2025	2026
Water Capital Budget						
Infrastructure Renewal						
Wells	$ 112,000	$ 1,987,000	$ 75,000	$ 80,000	$ 80,000	$ 85,000
Reservoirs	42,000	30,000	33,000	33,000	36,000	36,000
Treatment Plant	22,000	-	-	-	-	-
Mains	1,807,000	286,000	847,000	2,020,000	2,669,000	1,812,000
Pumps and Valves	35,000	75,000	-	600,000	-	-
Meters	65,000	64,000	64,000	64,000	64,000	64,000
Hydrants	53,000	53,000	55,000	55,000	55,000	55,000
Vehicles and Equipment	36,000	112,000	-	-	-	-
Technology and Other	42,000	86,000	16,000	16,000	26,000	20,000
Contingency	335,000	350,000	400,000	400,000	450,000	450,000
	$ 2,549,000	$ 3,043,000	$ 1,490,000	$ 3,268,000	$ 3,380,000	$ 2,522,000
Funding Source						
Reserve Funds	$ 2,414,200	$ 2,933,000	$ 1,390,000	$ 3,168,000	$ 3,270,000	$ 2,229,000
Debt	4,900	-	-	-	-	-
Grants	-	-	-	-	-	-
DCCs	20,000	10,000	-	-	10,000	93,000
Contributions	109,900	100,000	100,000	100,000	100,000	200,000
	$ 2,549,000	$ 3,043,000	$ 1,490,000	$ 3,268,000	$ 3,380,000	$ 2,522,000

Over the next five years of infrastructure replacement, focus will continue to be on water mains, coordinated with the replacement of other road, sewer, and drainage projects alongside a well replacement.

Key projects include:

- Main replacements on Johnston Road, Russell Avenue, and Prospect Avenue.
- Construction to replace the Oxford Well in 2022 at a cost of $1.8 million dollars.
- Construction of the Everall Street Pressure Reducing Valve Station in 2024 at a cost of $600,000.
- Maintenance of an annual program of meter and hydrant replacement (an average of 120 meters and 4 hydrants are replaced each year).
- An update to the Water Master Plan is planned for 2022 and a condition assessment of all cast iron water mains is planned for 2026.

At this time, there is no significant infrastructure work anticipated for the Reservoir or Treatment Plant over the next five years.

MAJOR PROJECT SPENDING

Well Replacement Program

The new Oxford Well has been moved forward for replacement in 2022 as a result of peak demand increases experienced during the heat dome last summer. Although water supply was steady and adequate at all times, an increase in supply is warranted through an abundance of caution, and as a hedge against heat spikes due to climate change.

A program of annual well maintenance and controller upgrades continues to be a focus as it relates to the need for reliable and adequate supply of water during demand spikes.

Wells	2021	2022	2023	2024	2025	2026
New Oxford Well #5		1,825,000				
Well Upgrades	112,000	75,000	75,000	80,000	80,000	85,000
Well Controller Upgrades		87,000				

Water Main Replacement Program

Water main replacement projects continue to be selected based on the 2017 Water Master Plan and subsequent leak history. Replacement of mains are scheduled before breaks significantly affect customer service. Wherever possible, renewals are linked to nearby redevelopment in order to leverage developer contributions and coordinate with replacement of other infrastructure like sewer and drainage systems. Key projects include replacements on Johnston Road, Russell Avenue and Prospect Avenue.

Water Mains	2021	2022	2023	2024	2025	2026
Johnston - Russell to Thrift	610,000					
Johnston - Thrift to Roper		10,000	11,000	115,000	100,000	
Blackburn Crescent - Archibald to high	65,000					
Surrey Emergency Connection	150,000					
Chestnut Blackburn to North Bluff	289,000					
1500 Blk Stevens	395,000					
1500 Habgood	161,000					
Prospect & Oxford	50,000					
Brearly Street and North Bluff	87,000					
North Bluff - Oxford to Everall		276,000				
Russell Ave - Merklin to Finlay			100,000	620,000		
Royal Easement - Cypress to Balsam			736,000			
Columbia Lane Cypress to Ash				385,000		
Buena Vista - Foster to Blackwood				300,000		
Russell Ave - Finlay to Stevens				600,000	708,000	
Coldicutt Chestnut to Lancaster					630,000	
1300 Blk Martin St					550,000	
Goggs Ave. Oxford to Everall					231,000	

Water Mains	2021	2022	2023	2024	2025	2026
Prospect Ave - Everall to Blackwood					450,000	
Martin North Bluff to Roper						650,000
Vidal St Thrift to Vine						440,000
Johnston Rd Beachview to Royal						184,000
1400 Blk Martin						378,000
Cast Iron Condition Assessment						160,000

Pumps and Valves

A pressure reducing station is planned for installation at North Bluff Road and Everall Street in 2024 so high pressures can be maintained to the east of Everall and lower pressures to the west. This will address customer complaints of low pressures near Johnston and Merklin Streets while not raising the pressures to the west to where they could cause customer concerns.

Pumps and Valves	2021	2022	2023	2024	2025	2026
Everall Street PRV Station				600,000		
Oxford Pumphouse HVAC		75,000				
Water Pressure Monitoring Stations	15,000					
Merklin Pump House Roof Repair	20,000					

Equipment Replacement

Vehicles are replaced as part of the regular fleet management program. In 2022 a 2012 F250 Crew Cab and 2 F150 trucks (2011 and 2012) are planned for replacement, subject to fleet ordering restrictions.

Vehicles and Equipment	2021	2022	2023	2024	2025	2026
Replace Ford F150 2wd Unit #363	36,000					
Replace Ford F150 Crew Cab 4X4 Unit #362		40,000				
Replace Ford F250 Crew Cab 4X4 Unit #364		42,000				
Chemical Room Jib Crane		30,000				

Capital Contingency

A capital contingency is maintained of between $350,00 and $450,000 per year to provide a cost buffer for both planned projects and flexibility in the event that additional capital work becomes urgent.