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## FULFORD WATER SERVICES COMMISSION

Notice of Meeting on **Tuesday, November 3, 2020 at 10:00 AM**  
Fulford Community Hall, 2591 Fulford-Ganges Road, Salt Spring Island, BC

Gary Holman

Anthony Maude

Carole Eyles

Gord Singbeil

Alan Martin

(r) regrets

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### AGENDA

#### 1. Territorial Acknowledgement / Call Meeting to Order

#### 2. Limited Space Meeting Resolution

That this resolution applies to the Fulford Water Service Commission for the meeting being held on November 3, 2020, and that the attendance of the public at the place of the meeting will be limited in accordance with the applicable requirements or recommendations under the Public Health Act, despite the best efforts of the Commission because:

- a. The available meeting facilities cannot accommodate more than (30) people in person, including members of the Commission and staff, and
- b. There are no other facilities presently available that will allow physical attendance of the Commission and the public in sufficient numbers; and

That the Commission is ensuring openness, transparency, accessibility and accountability in respect of the open meeting by the following means:

- a. By making the meeting agenda, as well as the other relevant documents, available on the CRD website, and directing interested persons to the website by means of the notices provided in respect of the meeting,
- b. By making the minutes of the meeting available on the CRD website following the meeting.

#### 3. Approval of Agenda

#### 4. Approval of Minutes September 10, 2020

3-5

#### 5. Director, Chair and Commissioner Reports

#### 6. New Business

##### 6.1 2021 Capital and Operating Budget

6-23

That the Fulford Water Service Commission:

1. Approve the 2021 operating and capital budget as presented, and that the 2020 actual surplus or deficit be balanced on the 2020 transfer to the Capital Reserve Fund; and,

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*To ensure quorum, advise Tracey Shaver 250 537 4448 if you cannot attend.*

2. Recommend that the Electoral Area Services Committee recommend that the CRD Board approve the 2021 Operating and Capital Budget and the five year Financial Plan for the Fulford Water Service as presented.

**7. Outstanding Business**

**7.1 Fulford Asset Management Plans**

24-95

To be received for information

**8. Adjournment**



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**Minutes of the Meeting of the FULFORD WATER SERVICE COMMISSION**  
**Held Thursday September, 2020 in the Creekside Room, 108 121 McPhillips Ave, Salt**  
**Spring Island, BC \*\* Teleconference**

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**DRAFT**

**Present:**

In person: Carole Eyles, Chair; Karla Campbell, Senior Manager, Salt Spring Island  
Electoral Area; Allen Xu, Manager SSI Engineering; Gary Holman, CRD  
Director; Tracey Shaver, Recording Secretary  
Microsoft Teams: Alan Martin; Anthony Maude; Gord Singbeil

It was intended that the meeting be open to public to listen to meeting through a teleconference line. Systems did not work as anticipate and the conference line was disconnected.

Chair Eyles called the meeting to order at 1:02 pm.

**1. Approval of Agenda**

**MOVED** by Commissioner Martin, **SECONDED** by Commissioner Maude,  
That the Fulford Water Service Commission meeting agenda of September 10, 2020 be  
amended to add Item 4.3 Request to Hold AGM at Fulford Hall, and Item 4.4 Report on  
Status of Reynolds Road Shed.

**CARRIED**

**2. Approval of Minutes May 7, 2020**

**MOVED** by Commissioner Maude, **SECONDED** by Commissioner Martin,  
That the Fulford Water Service Commission meeting minutes of May 7, 2020 be  
approved.

**CARRIED**

**3. Director, Chair and Commissioner Reports**

**3.1** Chair Eyles provided information regarding communication protocols and a recent  
water leak over a holiday weekend.

- CRD 24 hour emergency phone number used
- Local CRD IWS operations staff contacted by Victoria dispatch
- Local staff provided inappropriate response
- NSSWD was contacted directly and did respond to the leak
- No communications regarding timing of repair or water shut off
- Area residents kept each other informed
- IWS to follow up

**3.2** Director Holman briefly reported:

- 1- Capacity study of Weston Lake about to be undertaken; SSIWPA to review all water licenses on Weston Lake.
- 2- Infrastructure debit and need for capital and operational reserves; the Commission makes the recommendations on how and where to use any annual surplus. Retirement of debit can be an opportunity to direct unused funds towards reserve accounts.
- 3- Vortex Project- developer needs to identify “fire flow” needs and update design works.

**4. New Business**

**4.1 Alternative Design and Application to Transfer Additional Community Works Fund for Fulford Water Main Replacement Project**

- Engineering staff renegotiated with the Ministry of Transportation on design
- Revised design now allows for pipe to go under road
- Opens up construction window, eliminates work in stream and unknown bedrock conditions
- Various government regulatory agency requirements now lead the rational to fix the water main which has been exposed since 2011

**MOVED** by Commissioner Maude, **SECONDED** by Commissioner Martin,  
That the Fulford Water Service Commission recommends that the Capital Regional District Board amend the Fulford Water Service’s Five Year Capital Plan to increase the project budget by \$38,500 from \$60,600 to \$99,100 in year 2020 and that staff apply for Community Works Funds to fund the additional \$38,500.

**CARRIED**

**4.2 Fulford Ganges Road – Road weight limits**

- Commission would like the Ministry of Highways to define the weight limit capacity of the Fulford Ganges Road and more specifically the hill side leaving the village and ferry terminal
- The size, weight and volume of commercial traffic has increased since the road was designed
- The amount of water leaks and connection failures along this stretch of road has increased
- Enforcement of weight limits is regulated provincially under the Commercial Transport Act
- Utility owner responsible for constructing a protected system
- SAMP has identified pipes in distribution systems that should be replaced in 1 to 5 years
- Staff to determine the placement depth and size of pipe used in the area



- Commission seeking funding partners with BC Ferries and Ministry of Transportation for solution to perceived road and water utility failures caused by increased and unmonitored commercial traffic.

**4.3 Request to Hold AGM at Fulford Hall**

- Chair Eyles requested the 2019 AGM be held in person at Fulford Hall this fall.
- Staff to investigate requirements of site and considerations for in public meeting.

**4.4 Status of Reynolds Road Shed**

- Staff provided brief description of works completed.
- Project appears to be under budget by about 15%
- Any funds not required will go back to reserves
- Commission requests detailed accounting of Capital Projects

**5. Outstanding Business**

**5.1 Backup Power Plans**

- Staff are developing RFP to seek economies of scale by having one contractor develop designs for backup power plans for all of the CRD utilities.
- Fulford Water has asked not to be included in this process until they have reviewed the asset management plan.

**6. Adjournment**

**MOVED** By Commissioner Eyles, **SECONDED** by Director Holman,  
That the meeting adjourn at 3:01 pm.

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**CHAIR**

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**SENIOR MANAGER**



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## REPORT TO FULFORD WATER SERVICE COMMISSION MEETING OF TUESDAY, NOVEMBER 3, 2020

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### **SUBJECT**     2021 OPERATING AND CAPITAL BUDGET

### **ISSUE**

To present the 2021 operating and capital budget. In accordance with Bylaw No 3248, "Fulford Water Service Commission Bylaw No. 1, 2004" the Commission's approval of the annual budget is required.

### **BACKGROUND**

The Capital Regional District (CRD) is required by legislation under the Local Government Act (LGA) to prepare an annual operating and capital budget and a five year financial plan including Operating Budgets and Capital Expenditure Plans annually. CRD staff have prepared the budget and financial plan shown in Appendix A to this report for the Fulford Water Service.

The Operating Budget includes the regular annual costs to operate the service. The Capital Expenditure Plan shows the anticipated expenditures for capital additions. These may include purchases of new assets or infrastructure, upgrades or improvements to existing assets or asset review and study work that could potentially lead to future capital improvements.

In preparing the Operating Budget, CRD staff took into account:

1. Actual expenditures incurred between 2018 and 2020
2. Anticipated changes in level of service (if any)
3. Maximum allowable tax requisition
4. Annual Cost per taxpayer and per SFE

Factors taken into consideration in the preparation of the Capital Expenditure Plan included:

1. Available funds on hand
2. Projects already in progress
3. Condition of existing assets and infrastructure
4. Regulatory, environmental and health and safety factors

Adjustments for surpluses or deficits from 2020 may be made in January 2021. The CRD Board will give final approval to the budget and financial plan in March 2021.

The Financial Plan for the years 2022 – 2025 may be changed in future years.

### **BUDGET OVERVIEW**

#### ***Operating Budget***

It is projected that operating expenses in 2020 will be approximately \$6,010 over budget, due primarily to emergency response to several water system leaks including:

- 2909 Fulford Ganges Road

- 133 Sunnyside Road
- 201 Morningside Road
- Intersection of Morningside Road and Orchard Road
- 2881 Fulford Ganges Road
- 2905 Fulford Ganges Road
- 117 Hilltop Road (resulted in a boil water advisory)

The 2020 operating revenue is projected to be \$2,207 over budget primarily due to higher water sales and user charges as a result of an additional SFE for the service.

The overall operating deficit in 2020 is projected to be \$3,803 for the service. In order to balance the 2020 operating budget, CRD staff recommend that the deficit be balanced by reduction of 2020 transfer to the Capital Reserve Fund from \$10,900 to \$7,097.

The 2021 net operating costs has been increased by \$5,210 (3.7%). The increase is primarily to account for inflation and increased contracted operating and maintenance costs for the service.

### ***Municipal Finance Authority (MFA) Debt***

Loan Authorization Bylaw 3203 to borrow \$573,000 was approved and adopted in 2004 to construct new waterworks in Fulford Water Service Area. This debt is retired in 2020.

Loan Authorization Bylaw 3758 to borrow \$225,000 was approved and adopted in 2011 for upgrading water systems. Table 1 below summarizes the detailed information for existing MFA debt issues related to LA3758.

***Table 1 – Existing Debt Summary***

<i>MFA Issues</i>	<i>Term</i>	<i>Borrowing Year</i>	<i>Retirement Year</i>	<i>Refinance Year</i>	<i>Original Interest Rate</i>	<i>Current Interest Rate</i>	<i>Principal</i>	<i>Principal Payment</i>	<i>Interest Payment</i>	<i>Total Annual Debt Cost</i>
LA3758-118	15	2012	2027	2022	3.40%	3.40%	\$145,000	\$7,241	\$4,930	\$12,171
LA3758-121	15	2012	2027	2022	2.90%	2.90%	\$25,000	\$1,249	\$725	\$1,974
Total							\$170,000	\$8,490	\$5,655	\$14,145

### ***Operating Reserve Fund***

The Operating Reserve Fund is used to undertake maintenance activities that typically do not occur on an annual basis. Typical maintenance activities include hydrant/standpipe maintenance and reservoir cleaning and inspection. The operating reserve also funds the procurement of equipment and supplies that are not purchased on an annual basis. Additionally, the operating reserve could be used for emergency unplanned repairs.

It is proposed that transfers to the operating reserve increase by 1.6% from \$7,280 to \$7,400 ensure future maintenance activities are fully funded. There is \$20,000 of planned maintenance to be funded by the Operating Reserve over the next five years.

The Operating Reserve Fund balance at the end of 2020 is projected to be approximately \$24,516.

### ***Capital Reserve Fund***

The Capital Reserve Fund is to be used to pay for capital expenditures that are not funded by other sources such as grants, operating budget or debt.

It is proposed that the 2021 capital reserve fund transfer (CRF) increase from \$7,097 to \$46,000 to support the capital expenditure plan. This increase of CRF transfer is offset by the debt servicing cost reduction of \$41,054 mainly due to the debt retirement of \$573,000 in 2020. A total of \$94,000 will be required from capital reserves over the next five years to support the capital expenditure plan.

The balance of the Capital Reserve Fund at the end of 2020 is projected to be \$74,828.

### ***Capital Expenditure Plan***

The 5-year plan includes \$1,154,000 of expenditures to be funded by a combination of the service's Capital Reserve Fund, grants and new debt following a public engagement and referendum process planned in 2021. The new debt will fund the construction of backup power improvements for the service (\$180,000) and the initial phase of water main replacement (\$800,000).

Eight projects were added to the 2021-2025 five year capital plan:

1. Replacement of Flocculation mixer motor, \$9,000 (2021)
2. Installation of turbidity meter on influent line, \$4,000 (2021)
3. Replacement of impellers of pumps at Sunnyside Pump station, \$6,000 (2023)
4. Replacement of panel board directory and address issues with regard to resetting motor overload, \$10,000 (2024)
5. Water main assessment and replacement strategy and initial phase detailed design, \$90,000 (2021)
6. Initial phase of water main replacement construction, \$800,000 (2023)
7. Public engagement for borrowing to fund future projects, \$15,000 (2021)
8. Referendum or Alternative Approval Process for borrowing to fund future projects, \$10,000 (2021)

The service's asset management plan (AMP) which was completed in Q1 2020 supports long term planning on assets which drive capital replacement strategy, prioritization and schedule, as well as inform operations on the ongoing maintenance of assets, and assist with the asset upgrades and replacements. The AMP assists with defining the level of service required for the service. Using this information, and the asset age and condition information, the AMP helps classify the capital upgrades, operational requirements and appropriate budgets, and project funding mechanisms to include in the 5-year capital plans for the service.

Subject to electors assent, two borrowings in 2022 and in 2023 are projected to cover the capital expenditures related to construct a *back-up Power Generation equipment* and *Water Main replacement* respectively. Table 2 below provides the future debt servicing cost simulation for analytical purpose with the indicative interest rate provided by MFA at the time of simulation.

**Table 2 – Future New Debt Simulation**

<i>Future Borrowing(s) Estimation</i>	<i>Term</i>	<i>Borrowing Year</i>	<i>Retirement Year</i>	<i>Refinance Year</i>	<i>Estimated Interest Rate</i>	<i>Principal</i>	<i>Principal Payment</i>	<i>Interest Payment</i>	<i>Total Annual Debt Cost</i>
	15	2022	2037	2032	1.90%	\$180,000	\$10,409	\$3,420	\$13,829
	15	2023	2038	2033	1.90%	\$800,000	\$46,260	\$15,200	\$61,460
<b>Total</b>						<b>\$980,000</b>	<b>\$56,669</b>	<b>\$18,620</b>	<b>\$75,289</b>

At the commencement of each loan, 1% of the gross amount borrowed is withheld and retained by MFA as Debt Reserve Fund (DRF). In order to provide the full amount to fund the capital project, this 1% DRF amount is budgeted in operating budget in the year of borrowing. However, there is no principle payment required in the year of borrowing.

### **Capital Projects Fund**

As specific capital projects are approved, the funding revenues for them are transferred into this Capital Project Fund from multiple funding sources if applicable, including Capital Reserve Fund (CRF), grant funding, external contributions and Debt. Any funds remaining upon completion of a project will be transferred back to its original funding source(s).

The 2018 SAMP project is complete and *Decommissioning of Reynolds Rd Strainer* is anticipated to be complete by the end of 2020.

### **User Charge and Parcel Tax**

The service is funded by parcel tax, fixed user charges on residential properties, and water consumption charges on non-residential properties. All properties within the local service area are responsible for the parcel tax, residential properties connected to the water system pay the annual fixed user charge and all non-residential properties connected to the water system pay water consumption charge based on the water rate. The 2021 water rate for consumption charge remains unchanged from 2020 with the minimum charge equal to the residential fixed user charge in 2021.

Table 3 below summarizes the 2021 over 2020 changes for parcel tax and user charge.

**Table 3 – Parcel Tax and User Charge Summary**

<i>Budget Year</i>	<i>Parcel Tax</i>	<i>Taxable Folios Numbers</i>	<i>Parcel Tax per Folio*</i>	<i>User Charge</i>	<i>SFE Numbers</i>	<i>User Charge per SFE</i>	<i>Parcel Tax &amp; User Charge</i>
<b>2020</b>	\$66,359	102	\$684.73	\$130,793	95	\$1,376.77	<b>\$2,061.50</b>
<b>2021</b>	\$62,500	102	\$644.91	\$132,598	96	\$1,381.23*	<b>\$2,026.14</b>
<b>Change (\$)</b>	-\$3,859	0	-\$39.82	\$1,805	1	\$4.46	<b>-\$35.36</b>
<b>Change (%)</b>	-5.82%	0.00%	-5.82%	1.38%	1.05%	0.32%	<b>-1.72%</b>

\* Includes the 5.25% admin fee charged by the Ministry of Finance (not CRD revenue)

**RECOMMENDATION**

That the Fulford Water Service Commission:

1. Approve the 2021 operating and capital budget as presented, and that the 2020 actual surplus or deficit be balanced on the 2020 transfer to the Capital Reserve Fund; and,
2. Recommend that the Electoral Area Services Committee recommend that the CRD Board approve the 2021 Operating and Capital Budget and the five year Financial Plan for the Fulford Water Service as presented.

Submitted by:	Karla Campbell, Senior Manager, Salt Spring Island Electoral Area
Submitted by:	Matthew McCrank, MSc., P.Eng., Senior Manager, Infrastructure Operations
Submitted by:	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP Chief Administrative Officer

MMc/:ts

Attachment: [2021 Budget Fulford Water Service Budget](#)

# **CAPITAL REGIONAL DISTRICT**

## **2021 Budget**

### **Fulford Water (SSI)**

#### **Commission Review**

**Service:** 2.626 Fulford Water (SSI)

**Committee:** Electoral Area

**DEFINITION:**

To provide, operate and maintain water supply and distribution facilities for the Fulford Water Local Service Area on Salt Spring Island.  
Bylaw No. 3202 (November 24, 2004).

**PARTICIPATION:**

Order In Council No 177, Feb 24, 2005.

**MAXIMUM LEVY:**

Greater of \$156,000 or \$5.46 / \$1,000 to a maximum of \$362,147.

**MAXIMUM CAPITAL DEBT:**

**COMMITTEE:**

Fulford Water Service committee established by Bylaw No 3248 (Dec 15, 2004).

**FUNDING:**

Any deficiencies after user charge and/or parcel tax to be levied on taxable hospital assessments.

**User Charge:** Fixed user charge for residential properties.

**Parcel Tax:** Annual, levied only on properties capable of being connected to the system, starting 2006.

**Connection Charge:** The connection charge for a service shall be the actual cost for the connection.

**Consumption Charge:** Single Family Residential: No Consumption Charge  
Other: \$3.27 per cubic metre  
Minimum charge for non-residential properties is equal to residential fixed user charge per SFE.

**MAXIMUM OPERATING EXPENDITURE:**

**RESERVE FUND BYLAW:**

Fund 1070, established by Bylaw #3275 (April 27, 2005)



**2.626 - Fulford Water (SSI)**

	2020		BUDGET REQUEST				FUTURE PROJECTIONS			
	BOARD BUDGET	ESTIMATED ACTUAL	CORE BUDGET	ONGOING	ONE-TIME	TOTAL	2022	2023	2024	2025
<u>OPERATING COSTS</u>										
Operations Contract	50,810	47,800	56,270	-	-	56,270	57,400	58,550	59,720	60,920
Grit & Waste Sludge Disposal	7,380	7,800	7,510	-	-	7,510	7,660	7,810	7,970	8,130
Repairs & Maintenance	7,860	2,500	8,000	-	20,000	28,000	8,610	8,790	8,970	9,160
Allocations	9,653	9,653	8,622	-	-	8,622	8,207	8,367	8,530	8,696
Water Testing	5,680	4,200	5,780	-	-	5,780	5,900	6,020	6,140	6,260
Electricity	10,190	10,400	10,360	-	-	10,360	10,570	10,780	11,000	11,220
Supplies	7,520	11,240	7,650	-	-	7,650	7,800	7,950	8,100	8,250
Labour Charges	20,990	20,990	22,821	-	-	22,821	23,368	23,836	24,315	24,803
Other Operating Expenses	19,270	30,780	17,550	-	-	17,550	17,900	18,260	18,620	18,990
<b>TOTAL OPERATING COSTS</b>	<b>139,353</b>	<b>145,363</b>	<b>144,563</b>	<b>-</b>	<b>20,000</b>	<b>164,563</b>	<b>147,415</b>	<b>150,363</b>	<b>153,365</b>	<b>156,429</b>
*Percentage Increase over prior year			3.7%			18.1%	-10.4%	2.0%	2.0%	2.0%
Transfer from Operating Reserve Fund	-	-	-	-	(20,000)	(20,000)	-	-	-	-
<b>NET OPERATING COSTS</b>	<b>139,353</b>	<b>145,363</b>	<b>144,563</b>	<b>-</b>	<b>-</b>	<b>144,563</b>	<b>147,415</b>	<b>150,363</b>	<b>153,365</b>	<b>156,429</b>
Percentage Increase over prior year			3.7%			3.7%				
<u>DEBT / RESERVES</u>										
Transfer to Operating Reserve Fund	7,280	7,280	7,400	-	-	7,400	7,550	7,700	7,850	8,010
Transfer to Capital Reserve Fund	10,900	7,097	46,000	-	-	46,000	46,000	28,306	10,000	13,000
MFA Debt Principal	39,250	39,250	8,490	-	-	8,490	8,490	18,899	65,159	65,159
MFA Debt Interest	16,209	16,209	5,915	-	-	5,915	8,570	21,135	24,535	24,535
<b>TOTAL DEBT / RESERVES</b>	<b>73,639</b>	<b>69,836</b>	<b>67,805</b>	<b>-</b>	<b>-</b>	<b>67,805</b>	<b>70,610</b>	<b>76,040</b>	<b>107,544</b>	<b>110,704</b>
<b>TOTAL COSTS</b>	<b>212,992</b>	<b>215,199</b>	<b>212,368</b>	<b>-</b>	<b>-</b>	<b>212,368</b>	<b>218,025</b>	<b>226,403</b>	<b>260,909</b>	<b>267,133</b>
<u>FUNDING SOURCES (REVENUE)</u>										
Sales - Water	(15,000)	(16,400)	(16,400)	-	-	(16,400)	(16,400)	(16,400)	(16,400)	(16,400)
User Charges	(130,793)	(131,600)	(132,598)	-	-	(132,598)	(137,685)	(140,773)	(143,915)	(147,129)
Other Revenue	(840)	(840)	(870)	-	-	(870)	(880)	(890)	(900)	(910)
<b>TOTAL REVENUE</b>	<b>(146,633)</b>	<b>(148,840)</b>	<b>(149,868)</b>	<b>-</b>	<b>-</b>	<b>(149,868)</b>	<b>(154,965)</b>	<b>(158,063)</b>	<b>(161,215)</b>	<b>(164,439)</b>
<b>REQUISITION - PARCEL TAX</b>	<b>(66,359)</b>	<b>(66,359)</b>	<b>(62,500)</b>	<b>-</b>	<b>-</b>	<b>(62,500)</b>	<b>(63,060)</b>	<b>(68,340)</b>	<b>(99,694)</b>	<b>(102,694)</b>
*Percentage increase over prior year										
Sales						9.33%	0.00%	0.00%	0.00%	0.00%
User Fee						1.4%	3.8%	2.2%	2.2%	2.2%
Requisition						-5.8%	0.9%	8.4%	45.9%	3.0%
<b>Combined</b>						<b>-0.3%</b>	<b>2.7%</b>	<b>3.9%</b>	<b>15.3%</b>	<b>2.4%</b>

Fulford Water (SSI)  
Reserve Summary Schedule  
2021 - 2025 Financial Plan

**Reserve/Fund Summary**

	<b>Estimated</b>	<b>Budget</b>				
	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
Capital Reserve Fund	74,828	42,828	88,828	111,134	111,134	124,134
Operating Reserve Fund	24,516	11,916	19,466	27,166	35,016	43,026
<b>Total</b>	<b>99,344</b>	<b>54,744</b>	<b>108,294</b>	<b>138,300</b>	<b>146,150</b>	<b>167,160</b>

## Reserve Schedule

### Reserve Fund: 2.626 Fulford Water (SSI) - Capital Reserve Fund

Bylaw 3275

## Reserve Cash Flow

Fund: Fund Centre:	1070 101897	Estimated	Budget				
		2020	2021	2022	2023	2024	2025
Beginning Balance		89,131	74,828	42,828	88,828	111,134	111,134
Transfer from Ops Budget		7,097	46,000	46,000	28,306	10,000	13,000
Transfer from Cap Fund			-	-	-	-	-
Transfer to Cap Fund		(22,750)	(78,000)	-	(6,000)	(10,000)	-
Interest Income*		1,350	-	-	-	-	-
Ending Balance \$		74,828	42,828	88,828	111,134	111,134	124,134

### Assumptions/Background:

\* Interest should be included in determining the estimated ending balance for the current year. Interest in planning years nets against inflation which is not included.

## Reserve Schedule

### Reserve Fund: 2.626 Fulford Water (SSI) - Operating Reserve Fund - Bylaw 4144

Reserve fund used for: unforeseen operational repairs and maintenance; infrequent maintenance activities such as reservoir cleaning and inspection, hydrant maintenance. Optimum minimum balance of \$14,000 (approximately 10%) of the annual operating budget.

## Reserve Cash Flow

Fund: 1500 Fund Centre: 105207	Estimated	Budget				
	2020	2021	2022	2023	2024	2025
Beginning Balance	16,956	24,516	11,916	19,466	27,166	35,016
Transfer from Ops Budget	7,280	7,400	7,550	7,700	7,850	8,010
Expenditures	-	(20,000)	-	-	-	-
Planned Maintenance Activity		Reservoir cleaning and inspection				
Interest Income	280	-	-	-	-	-
Ending Balance \$	24,516	11,916	19,466	27,166	35,016	43,026

### Assumptions/Background:

**CAPITAL REGIONAL DISTRICT**  
**FIVE YEAR CAPITAL EXPENDITURE PLAN SUMMARY - 2021 to 2025**

<b>Service No.</b>	<b>2.626</b>	<b>Carry</b>						
	<b>Fulford Water (SSI)</b>	<b>Forward from</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>TOTAL</b>
		<b>2020</b>						

**EXPENDITURE**

Buildings	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$38,000	\$180,000	\$806,000	\$10,000	\$0	\$1,034,000
Land	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Engineered Structures	\$0	\$120,000	\$0	\$0	\$0	\$0	\$120,000
Vehicles	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$0</b>	<b>\$158,000</b>	<b>\$180,000</b>	<b>\$806,000</b>	<b>\$10,000</b>	<b>\$0</b>	<b>\$1,154,000</b>

**SOURCE OF FUNDS**

Capital Funds on Hand	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debenture Debt (New Debt Only)	\$0	\$0	\$180,000	\$800,000	\$0	\$0	\$980,000
Equipment Replacement Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grants (Federal, Provincial)	\$0	\$80,000	\$0	\$0	\$0	\$0	\$80,000
Donations / Third Party Funding	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reserve Fund	\$0	\$78,000	\$0	\$6,000	\$10,000	\$0	\$94,000
	<b>\$0</b>	<b>\$158,000</b>	<b>\$180,000</b>	<b>\$806,000</b>	<b>\$10,000</b>	<b>\$0</b>	<b>\$1,154,000</b>

Service #:	2.626
Service Name:	Fulford Water (SSI)

**Proj. No.**  
The first two digits represent first year the project was in the capital plan.

- Study** - Expenditure for feasibility and business case report.
- New** - Expenditure for new asset only
- Renewal** - Expenditure upgrades an existing asset and extends the service ability or enhances technology in delivering that service
- Replacement** - Expenditure replaces an existing asset

Debt = Debenture Debt (new debt only)  
ERF = Equipment Replacement Fund  
Grant = Grants (Federal, Provincial)  
Cap = Capital Funds on Hand  
Other = Donations / Third Party Funding

Res = Reserve Fund  
STLoan = Short Term Loans  
WU - Water Utility

Asset class  
L - Land  
S - Engineering Structure  
B - Buildings  
V - Vehicles  
E - Equipment

Input Title of Project. For example "Asset Name - Roof Replacement", "Main Water Pipe Replacement".

Briefly describe project scope and service benefits.

For example: *"Full Roof Replacement of a 40 year old roof above the swimming pool area; The new roofing system is built current energy standards, designed to minimize maintenance and have an expected service life of 35 years".*

This column represents the total project budget not only within the 5-year window

[illegible]

Service: <span style="color: blue;">2.626</span> <span style="color: blue;">Fulford Water (SSI)</span>			
--	--	--	--

Proj. No. <span style="background-color: #e6f2ff;">20-01</span>	Capital Project Title <span style="background-color: #d9d9d9;">WTP, Reservoir, PST Sunnyside Site Security</span>	Capital Project Description <span style="background-color: #d9d9d9;">Security fencing to secure assests</span>	
Asset Class <span style="background-color: #d9d9d9;">S</span>	Board Priority Area <span style="background-color: #d9d9d9;">0</span>	Corporate Priority Area <span style="background-color: #d9d9d9;">0</span>	
Project Rationale <span style="background-color: #e6f2ff;">Perimeter fencing is required to secure assets.</span>			

Proj. No. <span style="background-color: #e6f2ff;">21-01</span>	Capital Project Title <span style="background-color: #d9d9d9;">Power generation equipment</span>	Capital Project Description <span style="background-color: #d9d9d9;">Back up power construction</span>	
Asset Class <span style="background-color: #d9d9d9;">E</span>	Board Priority Area <span style="background-color: #d9d9d9;">0</span>	Corporate Priority Area <span style="background-color: #d9d9d9;">0</span>	
Project Rationale <span style="background-color: #e6f2ff;">Back up power construction.</span>			

Proj. No. <span style="background-color: #e6f2ff;">21-02</span>	Capital Project Title <span style="background-color: #d9d9d9;">Public Engagement for Future Projects</span>	Capital Project Description <span style="background-color: #d9d9d9;">Inform and engage public within service area on upcoming works that will require borrowing to fund.</span>	
Asset Class <span style="background-color: #d9d9d9;">E</span>	Board Priority Area <span style="background-color: #d9d9d9;">0</span>	Corporate Priority Area <span style="background-color: #d9d9d9;">0</span>	
Project Rationale <span style="background-color: #e6f2ff;">Referendum to secure borrowing.</span>			

Proj. No. <span style="background-color: #e6f2ff;">22-01</span>	Capital Project Title <span style="background-color: #d9d9d9;">Replacement of Flocculation mixer motor</span>	Capital Project Description <span style="background-color: #d9d9d9;">Replace two flocculation mixer motors</span>	
Asset Class <span style="background-color: #d9d9d9;">E</span>	Board Priority Area <span style="background-color: #d9d9d9;">0</span>	Corporate Priority Area <span style="background-color: #d9d9d9;">0</span>	
Project Rationale <span style="background-color: #e6f2ff;">0</span>			

Proj. No. <span style="background-color: #e6f2ff;">22-02</span>	Capital Project Title <span style="background-color: #d9d9d9;">Installation of turbidity meter on influent line</span>	Capital Project Description <span style="background-color: #d9d9d9;">Installation of turbidity meter on influent line</span>	
Asset Class <span style="background-color: #d9d9d9;">E</span>	Board Priority Area <span style="background-color: #d9d9d9;">0</span>	Corporate Priority Area <span style="background-color: #d9d9d9;">0</span>	
Project Rationale <span style="background-color: #e6f2ff;">0</span>			

Proj. No. <span style="background-color: #e6f2ff;">23-01</span>	Capital Project Title <span style="background-color: #d9d9d9;">Replacement of impellers of pumps at Sunnyside Pumpstation</span>	Capital Project Description <span style="background-color: #d9d9d9;">Replacement of impellers of pumps at Sunnyside Pumpstation</span>	
Asset Class <span style="background-color: #d9d9d9;">E</span>	Board Priority Area <span style="background-color: #d9d9d9;">0</span>	Corporate Priority Area <span style="background-color: #d9d9d9;">0</span>	
Project Rationale <span style="background-color: #e6f2ff;">0</span>			

<b>Proj. No.</b> 24-01	<b>Capital Project Title</b> Electrical service improvement at Fulford WTP	<b>Capital Project Description</b> Replacement of panel board directory and address issues with regard to resetting motor overload
<b>Asset Class</b> E	<b>Board Priority Area</b> 0	<b>Corporate Priority Area</b> 0
<b>Project Rationale</b> 0		

<b>Proj. No.</b> 22-03	<b>Capital Project Title</b> Water main assessment and replacement strategy and initial phase detailed design	<b>Capital Project Description</b> Develop a stragey and phased program to replace aging AC water mains in the svstem and perform detailed design for
<b>Asset Class</b> S	<b>Board Priority Area</b> 0	<b>Corporate Priority Area</b> 0
<b>Project Rationale</b> 0		

<b>Proj. No.</b> 25-01	<b>Capital Project Title</b> Initial phase of water main replacement	<b>Capital Project Description</b> Water main replacement detailed design and construction for priority sections
<b>Asset Class</b> E	<b>Board Priority Area</b> 0	<b>Corporate Priority Area</b> 0
<b>Project Rationale</b> 0		



## 2.626 - Fulford Water (SSI)

### Capital Projects Fund

Updated @ Oct 07, 2020

Year	Project#	Status	Capital Project Description	Total Project Budget	Expenditure Actuals	Remaining Funds	Funding Source		Total Funding in Place	Return Project Surplus After Completion***	
							CRF*	CWF**		CRF*	CWF**
2016	CE.507	OPEN	Weston Creek Watermain Crossing	60,600	37,011	23,589	49,100	11,500	60,600	-	-
2018	CE.641	CLOSE	2018 SAMP	10,000	9,428	572	10,000	-	10,000	572	-
2019	CE.699.4504	OPEN	Safe Work Procedures	11,000	2,588	8,412	11,000	-	11,000	-	-
2019	CE.700	CLOSE	Decommission Reynolds Rd Strainer	27,750	22,955	4,795	27,750	-	27,750	4,795	-
2020	CE.735	OPEN	Power generation equipment-Study (20-02)	10,000	-	10,000	10,000	-	10,000	-	-
			<b>Totals</b>	<b>119,350</b>	<b>71,981</b>	<b>47,369</b>	<b>107,850</b>	<b>11,500</b>	<b>119,350</b>	<b>5,367</b>	<b>-</b>

\* CRF (Capital Reserve Fund)

\*\* CWF (Community Works Fund)

\*\*\* Actual project surplus will be finalized at 2020 year end

Service:

**2.626 Fulford Water (SSI)**

**Committee: Electoral Area**

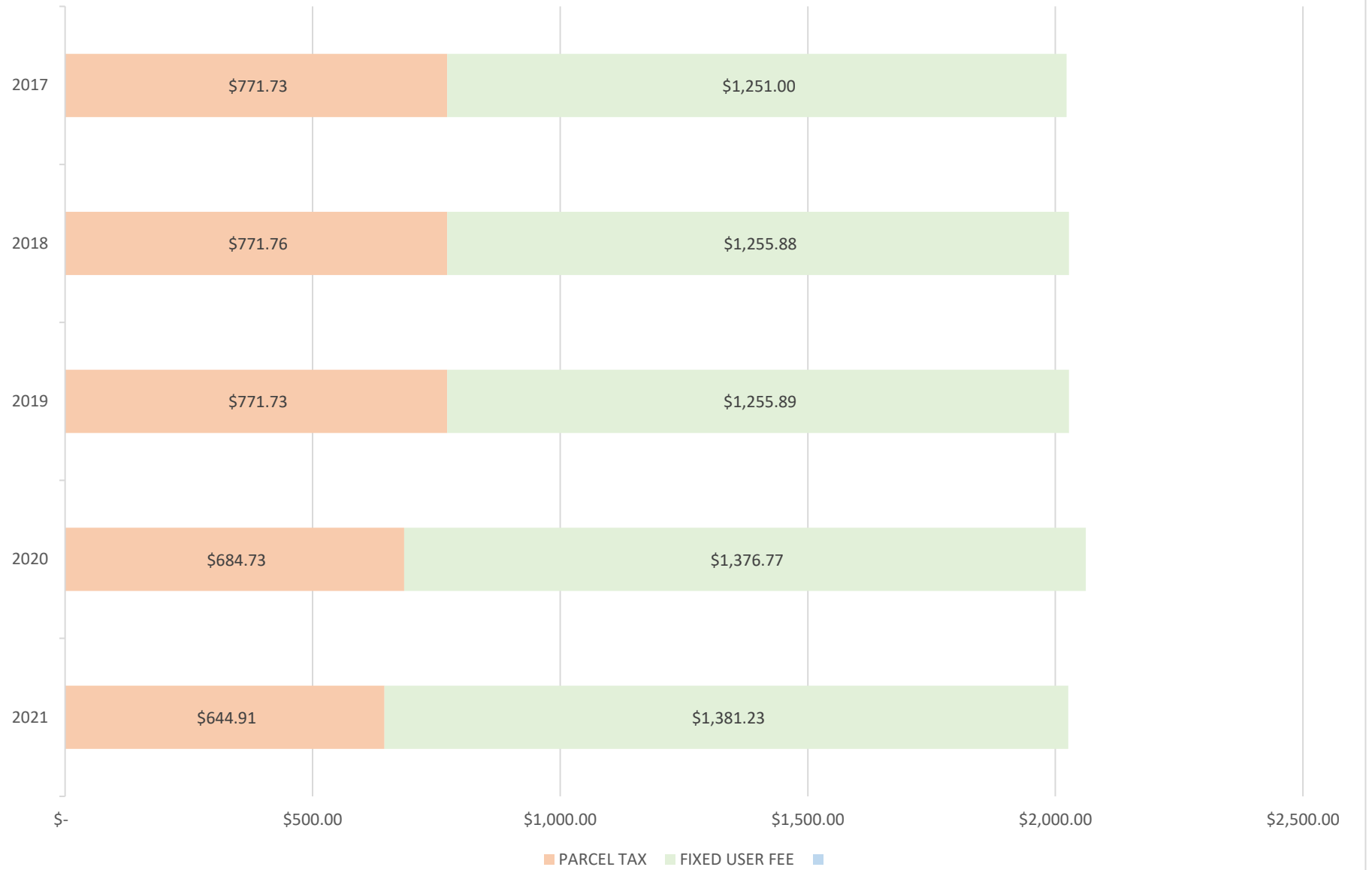
<u>Year</u>	<u>Taxable Folios</u>	<u>Parcel Tax Per Folio</u>	<u>SFE's</u>	<u>User Charge per SFE*</u>	<u>Total Tax &amp; Charges</u>	<u>Bylaw</u>	<u>Actual Assessments \$(000's)</u>
2010	101	\$631.68	95	\$850.00	<b>\$1,481.68</b>	3688	52,301.13
2011	101	\$631.68	96	\$1,222.00	<b>\$1,853.68</b>	3777	51,857.53
2012	102	\$631.68	96	\$1,391.00	<b>\$2,022.68</b>	3822	51,088.73
2013	102	\$771.68	96	\$1,251.00	<b>\$2,022.68</b>	3891	52,452.83
2014	102	\$771.68	94	\$1,251.00	<b>\$2,022.68</b>	3891	49,769.93
2015	102	\$771.73	95	\$1,251.00	<b>\$2,022.73</b>	3993	47,220.50
2016	102	\$771.73	95	\$1,251.00	<b>\$2,022.73</b>	4073	47,289.73
2017	102	\$771.73	95	\$1,251.00	<b>\$2,022.78</b>	4171	50,526.00
2018	102	\$771.76	95	\$1,255.88	<b>\$2,027.65</b>	4236	58,318.00
2019	102	\$771.73	95	\$1,255.89	<b>\$2,027.62</b>	4311	62,269.56
2020	102	\$684.73	95	\$1,376.77	<b>\$2,061.50</b>	4339	66,327.36
2021	102	\$644.91	96	\$1,381.23	<b>\$2,026.14</b>		

**Change from 2020 to 2021**

-\$39.82	\$4.46	-\$35.36
-5.82%	0.32%	-1.72%

**\* A variable consumption charge is paid by non-residential properties with a minimum charge equal to residential user charge per SFE.**

# Fulford Water Funding Analysis 2021 - 2025



**TO:** Fulford Water Local Area Service

**FROM:** Karla Campbell, Senior Manager, Salt Spring Island Electoral Area

**DATE:** November 3, 2020

**SUBJECT: Fulford Asset Management Plans**

---

**BACKGROUND:**

In 2019 the CRD engaged McElhanney Consulting Services to develop an Asset Management Plan (AMP) for each of the CRD water services on Salt Spring Island. The purpose of the AMP is to ensure that we are being sustainable in our delivery of our service and with that, the CRD has changed the name of the plan to Sustainable Service Delivery Plan (SSDP). An SSDP is essentially a plan to understand the demands of our community, the level of service that is being provided to serve that demand, risk, workforce and management of the asset's current and future lifecycle needs. It guides prioritization of future capital improvements and/or replacement through informed decision making and provides the basis to create a financial strategy for maintaining required and desired level of services. An SSDP ensures that sufficient resources are in place when needed to address the full lifecycle costs of owning tangible capital assets (assets) that are needed for delivering services. An asset is a physical component that has value, enables services to be provided, and has an economic life greater than 12 months.

The SSDP helps put some rigour and structure around the information used to make strategic decisions; and to ensure that the level of service being provided is sustainable and the assets will continue to work well, with no surprises, and provide our citizens with services by providing the following information:

- What are the demands and what is the level of service (current and desired) that is being provided?
- What performance level that each asset need to provide to provide the agreed upon level of service to the community?
- What we own, where it is, and what condition is it in?
- What is the asset's remaining useful life or service life?
- Which assets are the most critical, and what is the level of risk to their function and sustainability?
- What do we need to do to sustain the services provided by each asset? When do we need to do it by? What will it cost?

SSDP is a process used in decision making. It helps the CRD sustain the services that is delivered to the community and essential care for the infrastructure in way that considers service needs of the community; manages risks and opportunities; and uses resources wisely. In effect it is way to ensure safe and sustainable services delivered in a predictable, and cost-effective manner.

**KEY FINDINGS:**

- Total estimated capital infrastructure replacement is \$705,400
- Roughly 91% (\$2,999,650) of the Fulford assets<sup>1</sup> are overdue for renewal; a further 6% (\$208,300) in 1 – 5 years; and 2% (\$71,500) in 6 plus years.
- Financial planning work is required to address the asset investment while still maintaining sustainable services.
- Recommend resources be attached to improved data and records management to ensure accuracy, and create adequate system maps, working drawings, and system documentation.

Attachment(s): Fulford Water System Asset Management Plan

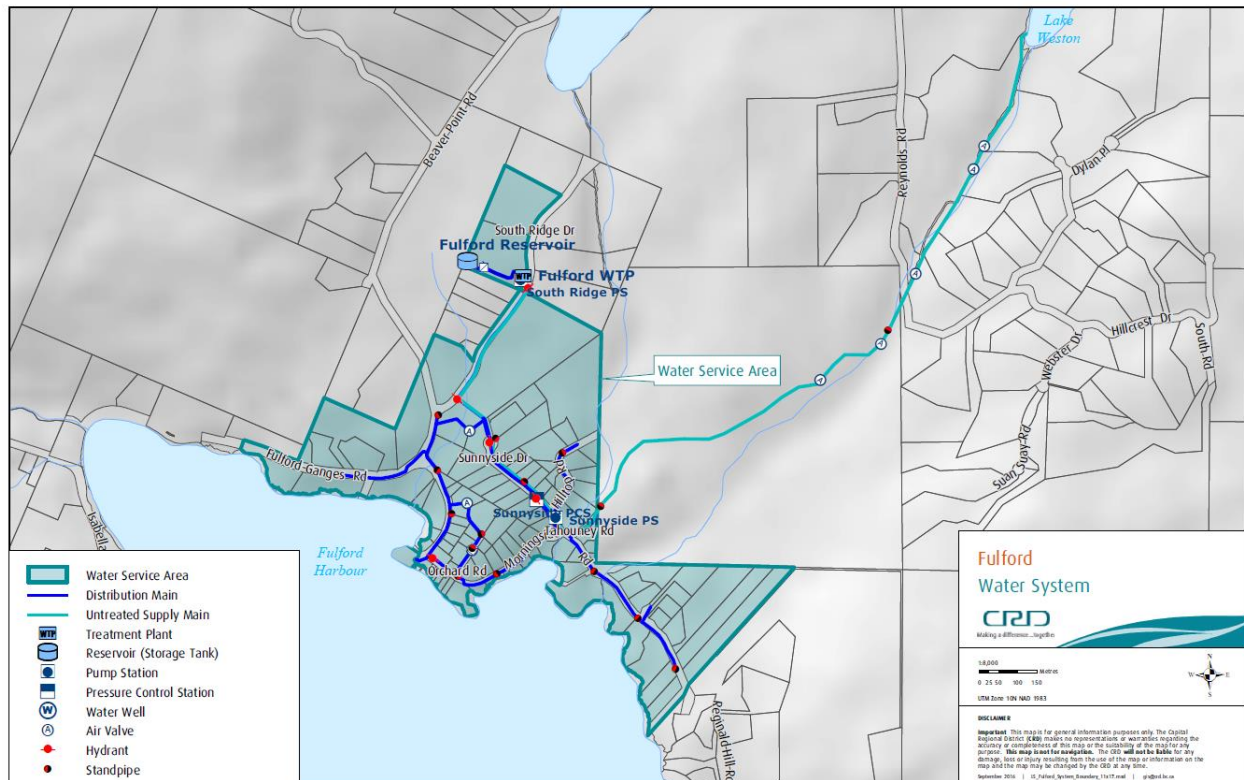
KC/AX:kc

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<sup>1</sup> Not incl. Reynolds Road building - decommissioned and hatch installation completed in 2020

CRD Salt Spring Island Electoral Area

# Fulford Water System Asset Management Plan



Prepared By:

**McElhanney Consulting Services Ltd.**

[www.mcelhanney.com](http://www.mcelhanney.com)

Date:

**May 2020**

REVISION No.	REVISION DESCRIPTION	DATE

## ACKNOWLEDGEMENT

McElhanney would like to acknowledge and express their appreciation to the CRD and North Salt Spring Waterworks District (NSSWD) staff during this assignment. A team effort was required to develop this Asset Management Plan; and it could not have been completed without the invaluable assistance provided by the following key individuals.

- Luke Sturdy, CRD Operations and Maintenance Operator
- Grant Tamboline, Waterworks Supervisor, North Salt Spring Waterworks District

## EXECUTIVE SUMMARY

McElhanney Consulting Services Ltd. (McElhanney) has been retained by the Capital Regional District (CRD) – *Salt Spring Island Electoral Area* to provide an updated asset management plan for the Fulford Water System. The asset management plan is intended to help the CRD optimize allocation of resources, support long term financial plans to fund infrastructure renewal / replacement as required, and further understand associated risks to help ensure that the Fulford Water System meets acceptable levels of service and regulatory requirements.

The asset management plan was developed through review of available system background information, site inspection of each asset, a system capacity assessment for current and future demands; and incorporation of CRD staff comments and concerns.

Based on the data gathered assembling the asset management plan, prioritized capital project recommendations to benefit the Fulford water system have been provided along with recommended time lines for implementation and cost estimates for planning purposes.



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**Appendix A – Fulford Water System Boundary Map**

**Appendix B – Fulford Water System Background Information List**

**Appendix C – Fulford Asset Condition Assessment Table**

**Appendix D – Fulford Asset Photo Observation Sheets**

**Appendix E – Fulford Water System Recommended Capital Projects Table**

# 1. BACKGROUND

## 1.1. INTRODUCTION

---

McElhanney Consulting Services Ltd. (McElhanney) has been retained by the Capital Regional District (CRD) – *Salt Spring Island Electoral Area* to provide an updated Asset Management Plan (AMP) for the Fulford Water System. The goals of the Fulford Water System AMP are to help the CRD optimize allocation of resources, support the CRD's long term financial plan to fund infrastructure renewal / replacement as required, and further understand associated risks to help ensure that the Fulford Water System meets acceptable levels of service and regulatory requirements.

McElhanney developed the AMP by reviewing available background information, conducting a site inspection of each asset generating a condition assessment; assessed system capacity for current and anticipated future population; and established prioritized recommendations with related cost estimates based on the study findings.

## 1.2. SYSTEM SUMMARY

---

The Fulford Water System is located in a semi-rural residential community with an elementary school and commercial component. The water system is situated on the north side of Fulford Harbour on Salt Spring Island. Lake Weston supplies raw water to the Fulford Water System and is at an elevation of approximately 60 m above sea level with the topography of the water service area ranging between sea level and 60 m.

The area is comprised of 102 parcels of land of which 91 parcels are presently connected to the system. See the *Fulford Water System Boundary System Map* in **Appendix A**.

The Fulford Water System is primarily comprised of the following assets:

### FULFORD WATER TREATMENT PLANT, RESERVOIR & PUMP STATION

The water treatment plant draws water from Lake Weston with a treatment process consisting of a rapid mix system, flocculation, dissolved air floatation (DAF), rapid filtration, ultraviolet (UV) disinfection, and chlorination. The water is then pumped to the reservoir. The Fulford reservoir has a capacity of 360 m<sup>3</sup> (80,000 IG) and is located south west of Fulford Community Elementary School.

### FULFORD DISTRIBUTION SYSTEM

Approximately 4.5 km of water distribution pipe consists of 50 mm to 100 mm asbestos cement pipe installed in 1970 and approximately 2.2 km of 50 mm to 150 mm PVC watermain installed in the late 2000s. The distribution system also includes fire hydrants, standpipes, gate valves; and water service connections complete with water meters.

### SUNNYSIDE DRIVE PRESSURE REDUCING STATION

There is one (1) pressure reducing valve station, PRS Sunnyside, in front of 122 Sunnyside Drive.

### SUNNYSIDE DRIVE PUMP STATION

The Sunnyside Drive pump station is located across from the Hilltop Road and Sunnyside Drive intersection, specifically at 105 Hilltop Place. The pump station boosts the water supply from Lake Weston to the water treatment plant at a simultaneous pumping rate of 2.3 L/s (30 gpm) from 2 pumps.

### 1.3. LEVEL OF SERVICE

---

The level-of-service that a water system should provide can be broken down into a few key areas as follows:

- Regulatory Compliance;
- Capacity of the System (existing and future); and,
- Customer Expectations / Risk tolerance.

The regulatory compliance level-of-service is mandatory and must be achieved to meet minimum public health and safety standards for safe drinking water and safe operation of the system. Regulatory compliance regulations, guidelines and standards for the Fulford Water System are listed in **Section 1.5** for reference.

The capacity of the system relates to the supply, production and delivery of the drinking water to the service area. There are a number of factors that can influence the level-of-service including, how much water people consume, age of the system (reduced efficiency), growth of the service area, climate change, etc. Capacity for the Fulford Water System is discussed in **Section 2.2**.

Customer expectation and risk tolerance is related to how well customers expect the system to perform over the long-term. This can include improved water quality requirements, water storage volumes (for domestic use and fire protection), system conveyance and pressures, system reliability and fire protection (flow, capacity, hydrants, etc.). Risk tolerance also relates to how much preventative maintenance should be performed on the system, when assets should be upgraded or replaced, system redundancy, and seismic resiliency.

The CRD has defined customer expectation and risk tolerance for the Fulford Water System as follows:

- Water quality meets regulatory compliance and safe water drinking guidelines;
- Fire flows/capacities are not supported; however, some hydrants are present;
- Storage capacity is adequate for existing usage, however, does not meet requirements for peak demand, or fire flows;
- Flushing of watermains occurs once per year for maintenance of the system, including exercising valves and hydrants;
- Pipe sizing is adequate for existing usage, but does not meet minimum requires as per Fire Underwriters Society;
- There is no system wide leak detection program;
- There is no back up power at critical infrastructure;
- There is no minimum requirement for pressure or flow for individual services; and,
- Maintenance program is a combination of preventative and reactive (discussed in more detail below), with the goal leaning more towards cost savings, rather than system resiliency.

## 1.4. 2011 FULFORD WATER SYSTEM ASSET MANAGEMENT PLAN

The Fulford Water System was first developed in 1968 under the name 'Fulford Water Improvement District'. The CRD undertook a feasibility study in 2000 towards ownership of the system and then established the 'CRD Fulford Water Service' in 2004. In 2011, the CRD developed a Fulford Water System AMP to re-evaluate the system and recommend improvements. The following table summarizes the 2011 Fulford Water System AMP recommendations, confirms if the recommendations are currently still valid and if they have been addressed.

**TABLE 1 – 2011 FULFORD WATER SYSTEM AMP EVALUATION AND IMPROVEMENTS SUMMARY**

Item #	Category	Asset Name	2011 AMP Evaluation / Recommendation	Still Valid ?	Addressed as of 2018 ?
1	Water Source	WTP FULFORD	"The quality of the raw water provided by Weston Lake represents the most significant issue related to the water source. Weston Lake is considered a eutrophic lake (high in nutrients and low in oxygen). Consideration should be given to the potential needs and implementations of control programs for algae, aquatic weeds or other undesirable aquatic organisms."	YES	NO
2	General	WTP FULFORD	"The existing system is over 40 years old, with much of the infrastructure showing its age. The 2010 Annual Water Quality Report for the Fulford water system indicated that the system continues to produce safe drinking."	YES	NO
3	Disinfection and Treatment	WTP FULFORD	"The Fulford water system currently has a DAF, rapid sand filtration WTP along with UV and chlorine disinfection. The WTP has ultimately a treatment capacity of 392 m <sup>3</sup> /day. This equipment is all less than two years old."	NO	YES
4	Storage	WTP FULFORD (RES FULFORD)	"The Fulford water system existing storage capacity for treated water is considered to be adequately sized to provide emergency and equalization storage."	NO	YES

Item #	Category	Asset Name	2011 AMP Evaluation / Recommendation	Still Valid ?	Addressed as of 2018 ?
6	Distribution System	DISTRIBUTION FULFORD	"The existing distribution system currently meets the domestic needs of the community but the non-revenue water production of 40% is considered significant. The water distribution system is not designed to provide fire protection. The mains are two-thirds asbestos cement (4,500 m) and reported to have been constructed in the late 1980s, making them almost 30 years old. The other third of the mains is PVC (2,200 m) and the majority of this pipe is less than 10 years old."	YES	NO Distribution flow is considered to be adequate, provided fire flows are not required
7	Distribution System	DISTRIBUTION FULFORD	"A program to replace the asbestos cement distribution mains should be initiated to reduce the water loss in the system. It would be desirable to replace the AC mains within the next five to ten years."	YES	NO See recommendations
9	Distribution System	DISTRIBUTION FULFORD	"The system contains a number of dead-end mains that cannot be interconnected as they service narrow areas that are at the extremities of the system or difficult terrain makes them difficult to loop. Flushing these mains during the summer months will be required to ensure chlorine residual and to maintain water quality."	YES	NO See recommendations
10	Distribution System	DISTRIBUTION FULFORD	"Distribution components associated with the asbestos cement watermain will be replaced as part of any watermain replacement program. Many of these components are as old as the mains. The valves need to be located and those that operate should be exercised regularly. The valves that do not operate should be identified and only replaced if they are critical to the operation of the distribution system."	YES	NO See recommendations
11	Distribution System	DISTRIBUTION FULFORD	"The watermain would need to be upgraded to a minimum 150 mm in order to provide fire protection."	YES	NO See comments on watermain pipe sizing in the Capacity Analysis

Further discussion on the "Still Valid" 2011 AMP system evaluation and recommendations that have not been addressed as of 2018 are covered in **Section 3**.

## 1.5. REGULATORY COMPLIANCE

---

The operation and maintenance of a water utility should be compliant with Provincial and Federal legislation, regulations, guidelines and standards as listed below, but not limited to:

- Guidelines for Canadian Drinking Water Quality, Health Canada
- Drinking Water Protection Act and Regulations, British Columbia
- Dam Safety Regulations – Water Act, British Columbia – Water Licenses
- British Columbia Water Sustainability Act and Groundwater Protection Regulation
- Island Health Authority
- Worksafe BC

## 1.6. MAINTENANCE PROGRAM

---

The Fulford Water System currently relies on a combination of preventative maintenance for larger serviceable items and reactive maintenance for smaller non-serviceable items, but not limited to:

- Currently using Preventative Maintenance Practices, with maintenance activities (PM's) scheduled in the Strategic Asset Plan (SAP);
- Smaller replaceable assets rely on reactive maintenance (fix it when it breaks), which is common industry practice;
- A shift to more predictive maintenance practices for critical assets may provide a more reliable system; however, this practice would increase costs, and may not be deemed necessary for a system of this size;
- Currently, some spare parts are not stored on Salt Spring Island and are kept in a pool of spare parts to be shared with other services within the CRD in an effort to reduce costs. Maintaining an inventory of critical spare parts on-hand may provide a more reliable system; however, maintaining such inventory would increase costs; and,
- The lifecycle plan for major assets (i.e. water treatment plant, reservoir, pump stations, etc.) will be to maintain and operate until it becomes cost-prohibited to do so. This lifecycle point will be anticipated through maintenance reviews and updated AMPs, at which time options for replacement/upgrade will be evaluated.

## 2. SYSTEM FINDINGS

### 2.1. ASSET ASSESSMENTS

---

McElhanney undertook an investigation which included review of available CRD system information and conducted site condition assessments for each asset with CRD staff.

#### 2.1.1. SYSTEM BACKGROUND INFORMATION REVIEW

McElhanney reviewed Fulford Water System information made available by the CRD which primarily consisted of the documents listed in **Appendix B**. Relevant information was used to further understand the system and confirm asset components.

#### 2.1.2. CONDITION ASSESSMENTS

Site assessments were completed to determine asset physical condition, establish criticality, and estimated remaining service life. The four (4) system assets have been defined as follows:

- **FULFORD WTP** – The water treatment plant and pump station are located on South Ridge Drive, adjacent to the Fulford Elementary School. A 360 m<sup>3</sup> (80,000 IG) capacity bolted-steel water tank is located northwest of the water treatment plant.
- **FULFORD DISTRIBUTION** - Approximately 4.5 km of asbestos cement and 2.2 km of PVC water distribution pipe and appurtenances located throughout the system area.
- **PRS SUNNYSIDE** – Pressure reducing valve station located on Sunnyside Drive near Hilltop Road.
- **PST SUNNYSIDE** - Pump station located next to Sunnyside Drive and Hilltop Road intersection.

The site assessments occurred over a two-day period on September 13<sup>th</sup> & 14<sup>th</sup> 2018. CRD staff attended the reviews to provide site access and offer relevant background information. CRD Operations staff input on the assessments is covered in **Section 2.1.7**.

Assets were assessed primarily focusing on mechanical, civil, health & safety, electrical, and structural aspects. Assessments were based on the criteria described in the following sections.

#### 2.1.3. ASSET PHYSICAL CONDITION GRADING SYSTEM

Asset physical conditions were graded based on the level of maintenance now required and on expected renewal / rehabilitation requirements:

1. **Very Good** – Asset is physically sound, performing its function as originally intended. Generally new or recently rehabilitated. Only planned maintenance required.
2. **Good** – Asset is physically sound, performing its function as originally intended. Required maintenance costs as within acceptable standards but increasing. Asset has been used for some time but is within mid stage of expected life.
3. **Fair** – Asset is showing signs of deterioration, performing at a lower level than originally intended. Some components are becoming physically deficient. Required maintenance costs exceed acceptable standards and increasing. Asset within the later stages of expected life.
4. **Poor** – Asset is showing significant signs of deterioration, performance is much lower than originally intended. Majority of asset is physically deficient. Required maintenance costs significantly exceed acceptable standards. Asset is approaching end of expected life.

5. **Very Poor** – Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance costs are unacceptable. Replacement / major refurbishment required.

#### 2.1.4. ASSET CRITICALITY GRADING SYSTEM

Asset criticality grades were established focusing on system interruption risk and health and safety issues. The grades are based on the following criteria:

1. **Non-Critical Asset** – Failure would not result in an immediate problem.
2. **Asset Standby Equipment Available** – Asset failure would result in replacement/repairs which could be completed relatively quickly.
3. **No Asset Equipment Redundancy** – Asset failure could result in moderately prolonged service interruption. Asset standby equipment not readily available.
4. **No Equipment Redundancy & Failure of equipment not monitored by alarm** - Asset failure could cause prolonged system interruption. Significant time and cost to get system back online.
5. **No Equipment Redundancy & Failure of equipment not monitored by alarm and/or immediate Health & Safety Concerns** - Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online. Asset essential to health and safety requirements.

#### 2.1.5. ASSET DATA CONFIDENCE GRADING SYSTEM

Assets were graded based on available data and records including but not limited to; documented procedures, investigations, analyses, reports, and drawings. Data confidence grades are based on the following criteria:

- A. **Highly Reliable** - Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete. Accuracy estimated +/- 2%.
- B. **Reliable** - Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, i.e. some data is old, missing, and / or extrapolated. Dataset is complete. Accuracy estimated +/- 10%.
- C. **Uncertain** - Data is based on sound records, procedures, investigations and analysis which is incomplete, unsupported, and/or extrapolated. Dataset is substantially complete but up to 50% is extrapolated. Accuracy estimated +/- 25%.
- D. **Very Uncertain** - Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most of the data is estimated or extrapolated. Accuracy estimated +/- 40%.
- E. **Unknown** - Very little or no data available.



### 2.1.6. ASSET SYSTEM CAPACITY GRADING SYSTEM

A capacity analysis was conducted for existing and future system requirements based on anticipated growth projections. The asset capacity analysis findings are discussed further in **Section 2.2**. Assets were graded based on capacity to meet current and long-term demands. Capacity Grades are based on the following criteria:

- A. **Excellent** - The asset has the capacity to meet long-term demand up to 10 years.
- B. **Good** - The asset has the capacity to meet medium-term demand up to 5 years.
- C. **Moderate** - The asset has the capacity to meet short-term growth demands.
- D. **Borderline** - The asset has the capacity to meet short-term growth demands but experiences some shortfalls.
- F. **Fail** - The asset capacity is not meeting its current demand and experiencing frequent shortfalls.

### 2.1.7. ASSET SERVICE LIFE

Estimated remaining service life of each asset and/or essential components were taken into consideration for the condition assessment with known installation dates.

Asset assessment data have been compiled into the *Asset Condition Assessment Table* found in **Appendix C**. The tables summarize the assessment findings and are grouped into mechanical, civil, health and safety, electrical, and structural components. The table provides additional information such as asset equipment description, general comments, location, gradings, service life, recommendations related to asset capital projects for improvements / upgrades, along with estimated costs. Capital project recommendations and cost estimates are discussed further in **Section 3**. *Photo Observation Sheets* found in **Appendix D** provide additional photographic details of select assets.

### 2.1.8. CRD AND NSSWD INPUT

CRD and NSSWD operator comments and concerns were collected and incorporated into the AMP recommendations. Comments and concerns received for the Fernwood Water System are listed below:

- “The Reynolds Road meter building with strainer should be decommissioned and a vault be installed.”
- “The Sunnyside air valve should be replaced.”
- “The Sunnyside (PST Sunnyside) booster pump impellers were “shaved down” and need to be replaced with correct impellers. The impellers will allow the plant to be able to run at maximum design flow of 4 L/s instead of the current operating flow of 2.2 L/s.”
- “The 50 mm galvanize piping in the Sunnyside pressure reducing valve station is rusted, corroded, and starting to leak.”
- “The air valves on the raw water line through Frasers’ Easement, from Reynolds Road to Tahouney Road, should be upgrade/replaced.”
- “The reservoir should be clean and inspect, as this has never been done since installation of the reservoir.”
- “The water service at 341 Reynolds Road has a direct water connection to the raw water line. Has requirements been addressed?”
- “The raw water intake pipe has never been inspected. Divers have not been there ever.”
- “The weir site has not been inspected.”
- “There is a beaver dam. Who is responsible for maintenance of the beaver dam?”
- “A security fence is needed at the treatment plant facility.”

## 2.2. SYSTEM CAPACITY ANALYSIS

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### Existing and Future Demand

The Fulford water service area is comprised of 102 properties of which 91 are connected to the system. Within those 91 parcels, there are 95 single family equivalents (SFE) as the use on some parcels represent more than one dwelling.

Between 2014 and 2017, total water produced has varied between 27,805 m<sup>3</sup>/year and 29,506 m<sup>3</sup>/year. The Fulford Water System does not have residential water meters; therefore, water consumption was not tracked and a single-family equivalent (SFE) water consumption was calculated. As per the 2017 annual report, the SFE water demand has increased from 234 m<sup>3</sup>/year in 2016 to 238 m<sup>3</sup>/year in 2017. Water consumption by users have been fluctuating by 5.8% over the past four years. This fluctuation may be typical throughout the CRD in areas with limited population growth as demand per capita has been decreasing.

Demand in the system varies significantly over the year, with the peak occurring in July or August. The measured Maximum Day Demand (MDD) in 2011 was 191 m<sup>3</sup>/day or 1,900 L/day per service connection. This is significantly lower than the CRD design criteria for MDD of 2,680 L/day per service connection.

While population on Salt Spring is anticipated to grow by approximately 2.5% per year, it is also predicted that water consumption per person will continue to decrease. Currently 89% of the properties in the water district are serviced. Unless the boundaries of the water service area are expanded, or significant subdivision occurs within the water service boundaries, it is anticipated that future demand will remain at current levels or perhaps decrease slightly.

### Water Supply

The CRD holds two water licenses for Lake Weston to divert a total of up to 106,400 m<sup>3</sup> per year (292 m<sup>3</sup>/day) and store up to 49,300 m<sup>3</sup>. Lake Weston is estimated to have a total volume of 1,090,000 m<sup>3</sup>. Lake Weston is subject to seasonal water quality changes and is affected by algae blooms. We are not aware of any recent hydrological studies to determine the capacity of the lake. The peak volume of water withdrawn from the lake between 2014 and 2017 was 29,506 m<sup>3</sup>/year. This peak volume is approximately 28% of the allowable capacity under the water licenses.

### Lake Intake

The existing lake intake was constructed in conjunction with the current water treatment plant. The capacity of the intake meets the capacity of the treatment plant. There were no issues observed or identified with respect to the condition or operation of the existing lake intake.

### Water Treatment Plant & Pump Station

The rated design flow for the water treatment plant is 4.5 L/s or 390 m<sup>3</sup>/day. This is approximately 2 times the MDD recorded in 2011. The treatment plant appears to have adequate capacity for the demand; however, further investigation should be conducted to assess plant efficiencies at lower demands. This recommendation has been captured in **Section 3**.

### Water Storage

There is one water storage reservoir in the system with a capacity of 360 m<sup>3</sup> (80,000 IG). The reservoir operates a single pressure system and is at an elevation of approximately 90 m above sea level.

Water reservoir capacity is comprised of three components: balancing storage, fire storage and emergency storage. Balancing storage should be a minimum of 25% of maximum day demand. Fire storage is dependent on the properties being protected, but for rural residential should be a minimum of 60 L/s for 1.5 hours or a total of 324 m<sup>3</sup>. Emergency storage is 25% of the balancing + fire storage.

The Fulford reservoir has a storage volume of 360 m<sup>3</sup>. It supplies water to approximately 91 properties (95 SFE). The Fulford Reservoir is fed from the South Ridge pump station. Balancing storage requirements are 47.7 m<sup>3</sup>. Fire storage is 324 m<sup>3</sup> and emergency storage is 93 m<sup>3</sup>. The total storage for requirement for Fulford is 464.7 m<sup>3</sup>. This reservoir has adequate storage for domestic flows but lacks capacity for full fire protection.

## Water Distribution

The water distribution system consists of 6.7 km of distribution main, in which there are 4.5 km of asbestos cement and 2.2 km of PVC piping. The system contains approximately half a dozen “dead end” mains. Most of these “dead ends” mains cannot be looped because they are located at the end of narrow service areas. There is an elevation drop from the Lake Weston to the properties closer to the ocean, which requires a pressure reducing stations along the route.

The 100 mm mains do not meet design guidelines and are under sized for fire flow as the friction head loss at fire flow would be excessive. At domestic flow rates, the friction head loss is lower, and the existing mains seem to provide adequate flow and pressure. The minimum size for watermains is 150 mm.

## Summary

As it is anticipated that future demand will remain at current levels or perhaps decrease slightly, future system capacity analyses were not evaluated. The following table provides a brief summary of the system capacity findings based on fire flow requirements not being required.

**TABLE 2 FULFORD WATER SYSTEM CAPACITY ANALYSIS SUMMARY TABLE**

Asset Name	System Components	System Capacity	System Capacity Grades (Defined in Section 2.1.6)
WTP FULFORD	Water Supply (From Weston Lake)	106,507 m <sup>3</sup> /year (water license limit)	A
WTP FULFORD	Lake Intake	292 m <sup>3</sup> /day	A
WTP FULFORD	Water Treatment Plant and Pump Station	292 m <sup>3</sup> /day	A
RES FULFORD	Water Storage	360 m <sup>3</sup> (80,000 IG)	A
DISTRIBUTION FULFORD	Water Distribution	Measured MDD in 2011 was 190 m <sup>3</sup> /day or 1,900 L/day per service	D

## Evaluation Design Criteria

The system capacity analysis referenced the following list of design criteria and guidelines:

- Design Guidelines for Rural Residential Community Water System, BC
- CRD Juan de Fuca Water Distribution Engineering Specifications
- Master Municipal Construction Document Design (MMCD) Guidelines
- Fire Underwriters Survey (FUS) – Water Supply for Public Fire Protection
- American Water Works Association (AWWA) Standards
- Recommended Standards for Water Works, Health Research Inc.

# 3. RECOMMENDATIONS

Prioritized capital project recommendations with recommended timelines and estimated costs have been developed for the Fulford Water System to support the CRD's asset management goals. The recommendations along with supporting data have been detailed in the *Fulford Water System Recommended Capital Projects Table* in **Appendix E**. Itemized recommendations are referenced to the *Condition Assessment Table* in **Appendix C** for further information and have been sorted by timeline prioritization. Prioritization, cost estimates, and evaluation source are further described below.

## 3.1. GOVERNING PRINCIPLES

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The capital project recommendations are prioritized based on the Fulford Water System AMP governing principles which have been developed to align with the CRD's water system level of service and asset management strategic goals. The governing principles, along with recommended timeline for project completion have been defined as follows:

- 1. Mandated Projects (IMMEDIATE: to be completed immediately to within one (1) year)**  
These are projects that are mandated by senior level of government. Projects required to adhere to regulatory compliance is an example of this.
- 2. Health and Safety Issues (IMMEDIATE: to be completed immediately to within one (1) year)**  
These are projects, that if not completed, could impact health, safety and property.
- 3. Community Priority (SHORT TERM: to be completed within one to five years)**  
These are projects that have been identified as a higher priority to benefit the community.
- 4. Operating Efficiencies / Costs (SHORT TERM: to be completed within one to five years)**  
These are projects that are intended to help reduce higher than usual operations and maintenance costs, and / or improve system functionality
- 5. Economic Support (LONG TERM: to be completed after six (6) plus years)**  
These are projects that are not immediately necessary but may be provided through community funding and grants.
- 6. Sustainability (LONG TERM: to be completed after six (6) plus years)**  
These are projects related to asset life cycle planning. All systems deteriorate over time; as such they will require maintenance and replacement.

## 3.2. COST ESTIMATES

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Estimated costs have been provided as an order of magnitude approximation for planning purposes. There are several limitations with preliminary budgetary estimates due to many variables and unknowns for work without detailed cost estimations, and assembling quotes, especially where the work may take place many years from now. CRD costs such as procurement, staff time, contingencies and additional operations and maintenance should be considered along with a detailed evaluation of any design, permitting, and construction costs. Timing and extent of asset upgrades and/or replacements is highly dependent on how well existing equipment is maintained in the interim and the owner following regularly scheduled AMP reassessments which are recommended to be completed every 5 years. For the Purposes of this exercise, cost estimates are generally intended to only include, engineering / design / planning, equipment procurement, and construction with a relatively small contingency (approx. 10%).

### 3.3. EVALUATION SOURCE

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The evaluation source for each asset capital project recommendation are listed in the *Fulford Water System Recommended Capital Projects Table*. Each of the evaluation sources listed below have been detailed throughout this report:

- Asset condition assessment;
- Review of current and future asset capacity requirements;
- Review of previous system AMP recommendations and current status; and,
- Incorporation of system comments and concerns from CRD staff.

## 4. FINANCIAL PLANNING

It was identified at the outset of this AMP that there were insufficient funds available to complete Financial Planning for implementation of the AMP recommendations. As such, Financial Planning will be completed by the Manager of Engineering, Salt Spring Island Electoral Area, in cooperation with CRD's Operations and Financial departments.

## 5. IMPROVEMENT PLAN

To help ensure future asset management plans and re-assessments on the CRD Salt Spring Island Electoral Area's water systems are executed effectively and efficiently, the following suggestions are provided for consideration:

- Provide additional details in future asset management plan request-for-proposals on service delivery expectations, report formatting, additional system background information, and avoid setting limitations on man-hours;
- Provide CRD staff NAMS training if the CRD wish to utilize this asset management system moving forward;
- Provide more time and opportunity for Operations staff to communicate issues, concerns, histories, and system details during asset management plan updates;
- Allocate additional time and resources to CRD staff to assemble, update, and keep track of all documentation relating the water system which could assist in future asset management planning exercises;
- Provide resources for more detailed Condition Assessments of critical equipment including, but not limited to, take-down, asset inspections, and non-destructive testing;
- Provide resources to provide more thorough review maintenance records;
- Provide resources to complete financial planning for recommended works; and,
- Provide resources to update / create adequate system maps, working drawings, and record documentation.

## 6. CLOSURE

We thank you for the opportunity to work on advancing the CRD Salt Spring Island Electoral Area's asset management planning and strategy for the Fulford Water System and sincerely look forward to working with you in the near future

This report has been prepared by **McELHANNEY CONSULTING SERVICES LTD.**

Prepared by:

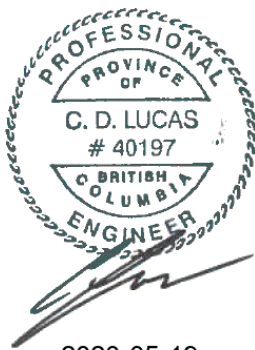


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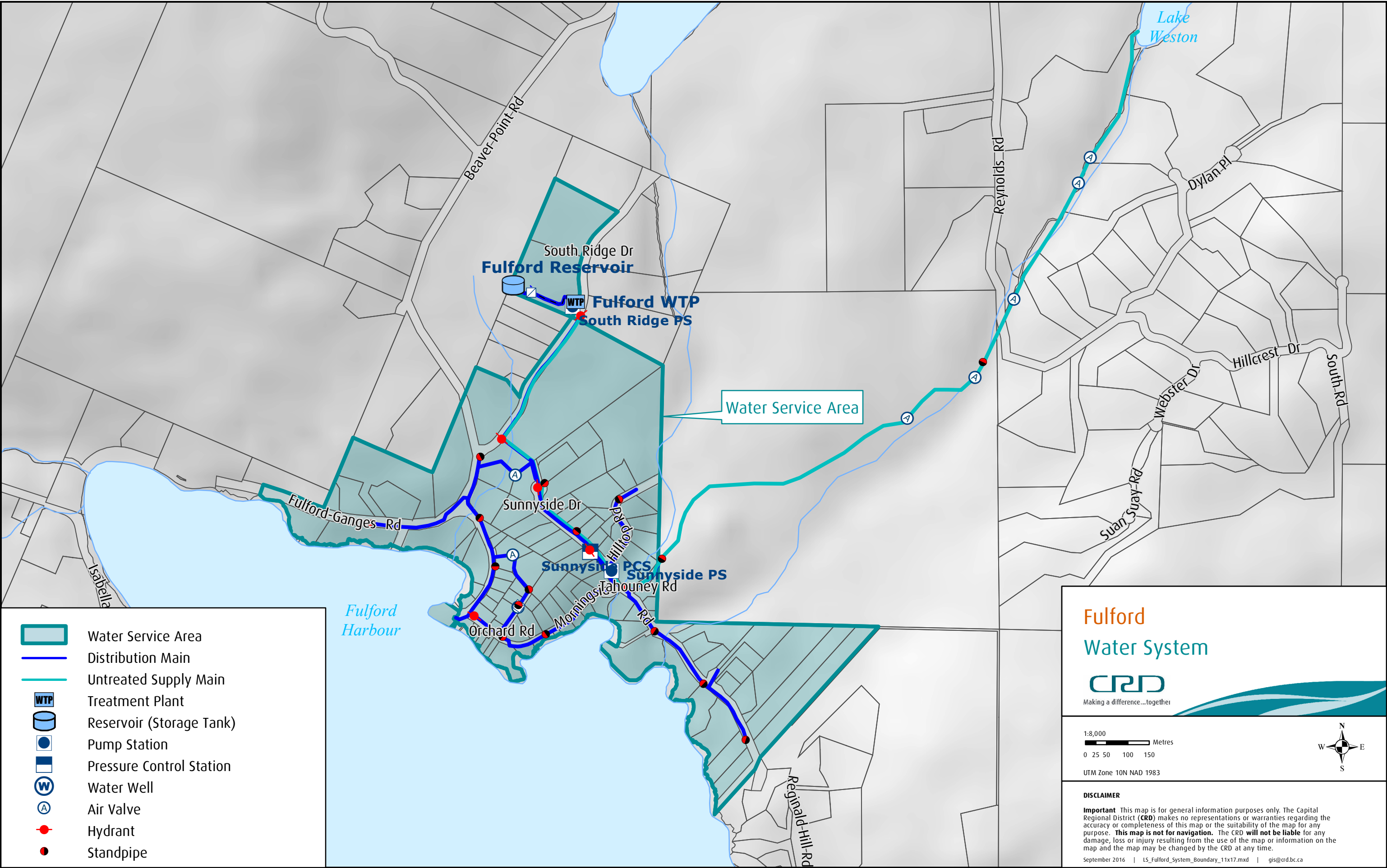


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# APPENDIX A

## FULFORD WATER SYSTEM BOUNDARY MAP



# APPENDIX B

## FULFORD WATER SYSTEM BACKGROUND INFORMATION LIST

## **FULFORD WATER SYSTEM DOCUMENTS**

- 1** FULFORD WATER SYSTEM BOUNDARY AND LAYOUT
- 2** SAMP - UPDATED FEB 2012 (DRAFT)
- 3** FULFORD WATER SERVICE - 2017 ANNUAL REPORT - JUNE 4, 2018
- 4** WATER SYSTEM (EXISTING AND PROPOSED)
- 5** BYLAW MAPPING
- 6** FULFORD RESERVOIR AND TREATMENT PLANT
- 7** SUNYSIDE RESERVOIR, DISSOLVED AIR FILTRATION, AND TREATMENT PLANT

# APPENDIX C

## FULFORD WATER SYSTEM ASSET CONDITION ASSESSMENT TABLE

Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
WTP Fulford - 203 South Ridge Drive																		
1	Fulford	WTP FULFORD	Mechanical	WTP	Water Treatment Plant (WTP) - the WTP draws water from Lake Weston. The treatment process consists of a rapid mix system, flocculation, dissolved air flotation (DAF), rapid filtration, ultraviolet disinfection, and chlorination. The WTP design flow is approximately 390 m³/day (4.5 l/sec; 60 lpgm).	1	There is only one WTP though some equipment has redundancy, such as filters, recycling/transfer pumps, coagulant pumps, and compressors. Regular maintenance taking place, as needed. Both flocculator mixer motors are leaking. There are no turbidity meters on the influent line to the WTP. Influent pump VFDs control flow to the plant on demand. There is no emergency power supply at the WTP. There are no spare parts on inventory; purchase is based on need. A spare chlorine dosing pump is needed. Jar testing equipment is shared with the Beddis WTP. Security fence around the WTP needs improvement. There are no washroom facilities at the WTP. The WTP is currently classified as a small water system though the system complexity requires Class IV, the same as the St Mary's Lake WTP.	Treatment Plant	The WTP consists of the following components:  DAF unit constructed of marine grade aluminum Inlet flow control and meter Mechanical rapid mix and flocculation Single DAF unit Two dual media, rapid gravity filters Two turbidity meters, one for each filter One air scour blower for filter backwash DAF pressurization system consisting of packed tower saturator, duplex air compressor, and recycle pumps One UV disinfection unit Storage and chemical dosing system with duplex coagulant injection pumps Storage and chemical dosing system with a single chlorine injection pump; chlorine monitoring equipment with a single chlorine recirculation pump  External storage tanks for storage of processed water, backwash, and DAF float (scum)  PLC control system for fully automatic operation Duplex effluent pumps Duplex backwash and rinse water recycle pumps	1	3	A	A	2010	20	2030	Repair or replace both flocculator mixer motors Install turbidity meters on influent line Investigate feasibility of supply emergency power supply for WTP Purchase a spare chlorine dosing pump Install security fencing around the facility There is a requirement for a washroom facility on site	\$7,000 \$2,000 \$5,000 \$1,000 \$20,000 \$6,000
2	Fulford	WTP FULFORD	Mechanical	RES	RES, Reservoir, Fulford Water	1	The tank has never been cleaned. Some sediment is visible at the bottom. Tank cleaning and inspection are required. Security fence around the water tank needs improvement. No leaks were identified.	Treatment Plant	360 m³ (80,000 lgal) bolted steel water tank at an elevation of approximately 90 masl.	1	3	A	A	2010	20	2030	Clean sediment from bottom of tank. Maintenance Schedule for cleaning and inspection water tank required. Improve security fencing around the facility.	\$8,000
3	Fulford	WTP FULFORD	Mechanical	MTR	MTR, Flow Meter, Raw Water Supply	1	The asset was previously used for chlorination of raw water supply. Currently, it is used for flow metering and leak detection in the raw water supply line. The wooden shed requires replacement with a secured vault. Signs of valve corrosion are visible inside the shed.	Reynold Rd	Flow meter inside a wooden shed.	4	1	A	A				Replace flow meter facility and provide a secured vault.	\$20,000
4	Fulford	WTP FULFORD	Civil	DWY	RD, Gravel Access Road and Parking	1	Well-graded gravel parking area in between the Fulford DAF WTP and the South Ridge PS. Well-graded gravel path from parking to WTP.	Treatment Plant	Access to WTP & PS	1	1	A	N/A	2010				
5	Fulford	WTP FULFORD	Civil	PTH	PTH, Access Pathway	1	Informal pathway leads to Fulford Reservoir at the southwest corner of Fulford Community Elementary school property. Maintenance should be done for path to Reservoir.	Treatment Plant	Pathway to Reservoir	2	1	A	N/A	2010			Maintenance should be done for path to Reservoir	\$5,000
6	Fulford	WTP FULFORD	Health & Safety	LAD	LAD, Ladder, Reservoir Access Ladder	1	Locking mechanism in place	Reservoir	Access Ladder	1	1	A	N/A	2010				
7	Fulford	WTP FULFORD	Health & Safety	EXT	EXT, Fire Extinguisher, #L-256143	1	Expired fire extinguisher to be inspected	Treatment Plant	Fire Extinguisher	3	2	A	A	2010			Inspect Fire Extinguisher and replace if required.	\$200
8	Fulford	WTP FULFORD	Health & Safety	EXT	EXT, Fire Extinguisher, #L-256164	1	Expired fire extinguisher to be inspected	Pump Station	Fire Extinguisher	3	2	A	A	2010			Inspect Fire Extinguisher and replace if required.	\$200
9	Fulford	WTP FULFORD	Health & Safety	SHO	SHO, Eyewash station and shower, Bradley Corp, Integrated eye-face wash and drench shower	1	Eyewash and drench shower station situated too close to filing cabinet. Suggest to relocate filing cabinet.	Treatment Plant	Eyewash and Drench Shower	1	1	A	N/A	2018				
10	Fulford	WTP FULFORD	Health & Safety	CON	CON, Isopac Containers	1	PACI containers should have a dedicated well-ventilated storage area with temperature ranging from 0 to 30°C	Treatment Plant	Chlorine Containers	1	2	A	N/A	N/A	5		Relocate Containers	\$250
11	Fulford	WTP FULFORD	Health & Safety	FAK	FAK, First Aid Kit	1	No first aid kits were observed. Recommend to have a first aid kit inside the WTP building. This can be shared with the PS building.	Treatment Plant	First Aid Kit	5	1	A	N/A	N/A			Replace First Aid Kit	\$200
12	Fulford	WTP FULFORD	Electrical	ELC	ELC, 200 Amp 120/208 Volt 3 Phase 100 KA SPD	1	Panel Board Directory Missing, limited available breaker space.	Treatment Plant	Electrical service and BC Hydro meter	2	5	A	A	2010	30	2040	Replace panel board directory, or install larger electrical service	\$12,000
13	Fulford	WTP FULFORD	Electrical	ELC	ELC, PLC, Control Panel, DAF Treatment	1	Built 2008 PLC not supported for replacement cards or processor. DAF Control Panel PLC not supported, spare cards and processor are no longer available from Schneider Electric. Control Panel has some safety concerns, motor overload resets are not external to the controller.	Treatment Plant	PLC Equipment DAF WTP process	2	5	A	A	2010	30	2040		
14	Fulford	WTP FULFORD	Electrical	FLT	FLT, Process Instrument, Ultrasonic Probe	2	2010 Milltronics unit not supported, replacement Siemens	Treatment Plant	DAF level sensing	2	5	A	A	2010/2016	15	2025/2031	Replace Siemens unit	\$5,000
15	Fulford	WTP FULFORD	Electrical	HVAC	HVAC, Electric Forced Air Unit Heater 5KW	2		Treatment Plant	Electric Heat	2	1	A	A	2010	15	2025		
16	Fulford	WTP FULFORD	Electrical	SCA	SCA, SCADA, RTU SCADA Pack 357	1	Built 2008	Treatment Plant	WTP Plant Process and Scada communications	2	5	A	A	2010	30	2040		
17	Fulford	WTP FULFORD	Electrical	ANT	ANT, Antenna, GE Transnet 900 MHz	1	Built 2008	Treatment Plant	Communications radio antenna	2	5	A	A	2010	25	2040		
18	Fulford	WTP FULFORD	Electrical	LIT	LIT, Light, Begelli Fluorescent 2 lamp T8 Vapour Proof	8	T8 Lamps considered matured, LED replacement should be considered	Treatment Plant	Lighting	2	1	A	N/A	2010	10	2020	Replace T8 Lamps with LED lighting	\$3,000
19	Fulford	WTP FULFORD	Electrical	LIT	LIT, Light, Emergency Lighting Ready-Lite	3		Treatment Plant	Emergency Backup Lighting for building egress	2	2	A	N/A	2010	10	2020		
20	Fulford	WTP FULFORD	Electrical	SAF	SAF, Safety Code, Panel Board Directory Missing	1	Main Electrical Service Panel Board Directory Missing.	Treatment Plant				A	A		15		Replace Panel Board Directory. Address safety concerns regarding resetting motor overloads	\$5,000
21	Fulford	WTP FULFORD	Electrical	POW	POW, Power Supply, AC power, Uninterruptable	1		Treatment Plant	Provides limited 120 volt ac power for process shutdown on power loss	1	3	A	A	2010	7	2017		
22	Fulford	WTP FULFORD	Electrical	POW	POW, Power Supply, DC power, Uninterruptable	1		Treatment Plant	Provides limited 24 volt dc power for process shutdown and Scada on power loss	1	3	A	A	2010	20	2030		
23	Fulford	WTP FULFORD	Electrical	ELC	ELC, 100 Amp Sub-Panel fed from WTP main service	1		Pump Station	Electrical service and BC Hydro meter	2	5	A	A	2010	30	2040		
24	Fulford	WTP FULFORD	Electrical	STA	STA, Starter, Recycle Pump P1 and P2	2	Eaton motor starter	Pump Station	Pump starter	2	2	A	A	2010	15	2025		
25	Fulford	WTP FULFORD	Electrical	VFD	VFD, Variable Frequency Drive, Booster P1 and P2	2	Eaton VFD, MVX model no longer supported	Pump Station	Pump VFD	2	2	A	A	2010	15	2025	Eaton VFD, MVX model no longer supported - Investigate alternatives	\$5,000
26	Fulford	WTP FULFORD	Electrical	FLT	FLT, Process Instruments, Float Switch	6	Backwash, Clearwell and Rinse Tanks, all float and level transducer wiring susceptible to damage and vandalism.	Backwash, Clearwell and Rinse Tanks	Tank level sensing	2	5	A	A	2010/2016	15	2025		



Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
27	Fulford	WTP FULFORD	Electrical	FLT	FLT, Process Instruments, Level Transducer	3	Backwash, Cleanwell and Rinse Tanks, all float and level transducer wiring susceptible to damage and vandalism.	Backwash, Cleanwell and Rinse Tanks	Tank level sensing	2	5	A	A	2010	15	2025	Provide a secure vault for float and level transducer wiring	\$6,000
28	Fulford	WTP FULFORD	Electrical	HVAC	HVAC, Electric Forced Air Unit Heater 3KW	1		Pump Station	Electric Heat	2	1	A	A	2010	15	2025		
29	Fulford	WTP FULFORD	Electrical	LIT	LIT, Light, Bagelli Fluorescent 2 lamp T8 Vapour Proof	3	T8 Lamps considered matured, LED replacement should be considered	Pump Station	Lighting	2	1	A	N/A	2010	10	2020	Replace T8 Lamps with LED lighting	\$1,000
30	Fulford	WTP FULFORD	Electrical	LIT	LIT, Light, Emergency Lighting Ready-Lite	1		Pump Station	Emergency Backup Lighting for building egress	2	2	A	N/A	2010	10	2020		
31	Fulford	WTP FULFORD	Electrical	REC	REC, Receptacles	2		Pump Station	Receptacles	2	1	A	A	2010	10	2020		
32	Fulford	WTP FULFORD	Electrical	FLT	FLT, Process Instruments, Float Switch	2		Reservoir	Tank level sensing	2	5	A	A	2010	15	2025		
33	Fulford	WTP FULFORD	Electrical	FLT	FLT, Process Instruments, Level Transducer	1		Reservoir	Tank level sensing	2	5	A	A	2010	15	2025		
34	Fulford	WTP FULFORD	Structural	SIT	SIT, Overall Site	1	Ongoing maintenance is being performed by CRD personnel. Ground cover is maintained on a regular basis.	Treatment Plant	Site is sloping with a stacked rock retaining wall to provide a flat area for the chlorine treatment building.	1	1	A	N/A	2011	50	2061		
35	Fulford	WTP FULFORD	Structural	DWY	DWY, Driveway, Gravel	1	Gravel driveway is well maintained and accessible.	Pump Station	Gravel driveway is shared with the DAF treatment building. Driveway is sloped down to South Ridge Drive.	1	1	A	N/A	2011	50	2061		
36	Fulford	WTP FULFORD	Structural	PKG	PKG, Parking Lot	1	Gravel driveway is well maintained and accessible.	Pump Station	Parking is part of the driveway. Overflow parking on the side of South Ridge Drive.	1	1	A	N/A	2011	50	2061		
37	Fulford	WTP FULFORD	Structural	SER	SER, Service, Stormwater	1	No service issues were noted.	Pump Station	Stormwater exits the site into a ditch along South Ridge Drive.	1	1	A	N/A	2011	50	2061		
38	Fulford	WTP FULFORD	Structural	FEN	FEN, Fence, Perimeter	0	Perimeter fencing is required to secure the water treatment facilities. See Main building.	Pump Station	There is no perimeter fencing around the site.	5	1	A	N/A	2011	25	2036	Install perimeter fencing around WTP.	Refer to Item (1)
39	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Foundation	15.0 m <sup>2</sup>	No foundation issues were noted.	Pump Station	Foundation is a reinforced concrete foundation and slab on grade system.	1	1	A	A	2011	50	2061		
40	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Wood Frame	15.0 m <sup>2</sup>	PST South Ridge houses pumping and chlorination systems and is located on the same site as WTP Fulford. The building is a single storey wood frame structure on a concrete slab on grade foundation system. No structural issues were noted.	Pump Station	Structure is a wood framed wall and roof system.	1	1	A	A	2011	50	2061		
41	Fulford	WTP FULFORD	Structural	STR	STR, Structure Cladding, Cement	15.0 m <sup>2</sup>	Exterior walls are covered in horizontal cementitious siding. No cladding issues were noted.	Pump Station	The building is clad in cement based siding with a rainscreen system.	1	1	A	A	2011	25	2036		
42	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Openings, Exterior	15.0 m <sup>2</sup>	Door mutes are required to prevent door to frame contact. Door contactors for alarm system require replacement with roller type devices.	Pump Station	There are no windows in the building. Doors are insulated metal with metal frames and emergency hardware.	2	1	A	A	2011	25	2036	Install door mutes and replace roller type alarm system.	\$3,000
43	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Roof	15.0 m <sup>2</sup>	The roof system is sloped with asphalt shingle roofing and metal gutters. Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure.	Pump Station	Roof is an asphalt shingle system with metal gutters and downspouts.	2	1	A	A	2011	25	2036	Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure.	\$4,000
44	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Partitions, Interior	15.0 m <sup>2</sup>	No issues were noted with interior partitions.	Pump Station	Separation wall between pumps and chlorine room are wood framed.	1	1	A	A	2011	25	2036		
45	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Finishes, Interior	15.0 m <sup>2</sup>	No issues were noted with interior finishes.	Pump Station	Walls and ceiling are covered in painted plywood sheathing. Floor is an exposed concrete slab.	1	1	A	A	2011	15	2026		
46	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Openings, Interior	15.0 m <sup>2</sup>	N/A	Pump Station	Structure interior opening	1	1	A	A	2011	25	2036		
47	Fulford	WTP FULFORD	Structural	HVAC	HVAC, Exhaust System	1	There is no washroom facility. There is a building exhaust system. There is a requirement for a washroom facility on site (see Main building).	Pump Station	Structure mechanical	1	1	A	N/A	2011	25	2036	There is a requirement for a washroom facility on site.	\$6,000
48	Fulford	WTP FULFORD	Structural	ELC	ELC, Heater	1	Heating is provided by an electric unit heater and baseboard heaters. There is no emergency generator to operate emergency systems in case of a power outage. See electrical for comments.	Pump Station	The building is heated with an electric unit heater and baseboard heater.	1	1	A	N/A	2011	25	2036		
49	Fulford	WTP FULFORD	Structural	SAF	SHO/EXT, emergency eye wash station, fire extinguisher	1	Emergency wash station and fire extinguisher are serviced on a regular basis. There is a requirement for a hot water tank in the chlorine room to temper the water provided for the eye wash station.	Pump Station	There is an emergency eye wash station. There is a fire extinguisher installed. There is a chlorine containment system.	3	1	A	N/A	2011	25	2036	Install hot water tank to temper water provided for eye wash station.	\$3,000
50	Fulford	WTP FULFORD	Structural	SIT	SIT, Overall Site	1	Ongoing maintenance is being performed by CRD personnel. Ground cover is maintained on a regular basis.	Reservoir	Site is sloping with a flat area created at the top of the site for the tank and foundation..	1	1	A	N/A	2011	50	2061		
51	Fulford	WTP FULFORD	Structural	PTH	PTH, Access Pathway	1	Grass path is maintained on a regular basis.	Reservoir	Access is by way of a grass path from the school below.	1	1	A	N/A	2011	50	2061		
52	Fulford	WTP FULFORD	Structural	PKG	PKG, Parking Lot	0	N/A	Reservoir	There is no parking for the site.	1	1	A	N/A	2011	50	2061		
53	Fulford	WTP FULFORD	Structural	SER	SER, Service, Water System	1	N/A	Reservoir	All services are related to water system.	1	1	A	N/A	2011	50	2061		
54	Fulford	WTP FULFORD	Structural	FEN	FEN, Fence, Perimeter	0	Perimeter fencing is required to secure the water reservoir from vandalism.	Reservoir	There is no perimeter fencing around the site.	1	1	A	N/A	2011	25	2036	Install perimeter fencing around water reservoir.	\$15,000
55	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Foundation, Concrete	1	No foundation issues were noted.	Reservoir	Foundation is a reinforced concrete foundation system.	1	1	A	A	2011	50	2061		
56	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Tank, Steel	1	RES Fulford is located above the adjacent school playing field. The reservoir is a packaged metal tank on a concrete foundation system. No structural issues were noted.	Reservoir	Tank is a packaged steel tank.	1	1	A	A	2011	50	2061		
57	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Cladding	1	No cladding issues were noted.	Reservoir	Tank is clad in prefinished sheet metal.	1	1	A	A	2011	25	2036		
58	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Openings, Exterior	1	No issues noted with exterior openings.	Reservoir	Tank lid is secured from vandalism.	1	1	A	A	2011	25	2036		
59	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Roof	1	No issues were noted with the roof of the tank.	Reservoir	Roof is part of the packaged steel tank.	1	1	A	A	2011	25	2036		



Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
60	Fulford	WTP FULFORD	Structural	LAD	LAD, Ladder, Reservoir Access Ladder	1	The metal hatch at the bottom of the ladder enclosure requires a new lock.	Reservoir	The exterior metal ladder system is part of the packaged tank.	1	1	A	N/A	2011	25	2036	Install new lock on metal hatch at the bottom of the tank's ladder	\$100
61	Fulford	WTP FULFORD	Structural	RAI	RAI, Railing, Exterior	1	There were no issues noted with exterior railings.	Reservoir	The metal ladder enclosure and upper railing are part of the packaged tank.	1	1	A	N/A	2011	25	2036		
62	Fulford	WTP FULFORD	Structural	SAF	LAD, Ladder, Enclosure	1	No issues were noted with the safety of the tank.	Reservoir	Fall prevention at the ladder enclosure is by way of a metal enclosure around the ladder and upper hatch.	1	1	A	N/A	2011	25	2036		
63	Fulford	WTP FULFORD	Structural	SIT	SIT, Overall Site	1	Ongoing maintenance is being performed by CRD personnel. Ground cover is maintained on a regular basis. Adjacent trees require trimming to prevent damage to the roof system and adjacent finishes. Invasive blackberry bushes in back of WTP should be removed.	Treatment Plant	Site is sloping with a Loc Block retaining wall to provide a flat area for the DAF Main building.	2	1	A	N/A	2011	50	2061	Tree and bush trimming required around facility to prevent damage to facility roofing and finishing.	\$4,000
64	Fulford	WTP FULFORD	Structural	DWY	DWY, Driveway, Gravel	1	Gravel driveway is well maintained and accessible.	Treatment Plant	Gravel driveway is shared with the chlorination building. Driveway is sloped down to South Ridge Drive.	1	1	A	N/A	2011	50	2061		
65	Fulford	WTP FULFORD	Structural	PKG	PKG, Parking Lot, Gravel	1	Gravel driveway is well maintained and accessible.	Treatment Plant	Parking is part of the driveway. Overflow parking on the side of South Ridge Drive.	1	1	A	N/A	2011	50	2061		
66	Fulford	WTP FULFORD	Structural	SER	SER, Service, Stormwater	1	Positive drainage is required at the rear of the pipe entry shed. Consider tying rainwater downspout to the existing perimeter drainage for the main part of the building.	Treatment Plant	Stormwater exits the site into a ditch along South Ridge Drive.	2	1	A	N/A	2011	50	2061	Positive drainage is required at the rear of the pipe entry shed. Consider tying rainwater downspout to the existing perimeter drainage for the main part of the building.	\$5,000
67	Fulford	WTP FULFORD	Structural	FEN	FEN, Fence, Perimeter	1	Perimeter fencing is required to secure the water treatment facilities.	Treatment Plant	There is no perimeter fencing around the site.	5	1	A	N/A	2011	25	2036	Install perimeter fencing around WTP.	Refer to Item (1)
68	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Foundation, Concrete	71.5 m <sup>2</sup>	Backfilling is required at the foundation slab for the pipe entry shed to prevent further erosion of grounds under concrete slab that could cause failure of the slab.	Treatment Plant	Foundation is a reinforced concrete foundation and slab on grade system.	2	1	A	A	2011	50	2061	Backfill is required at foundation slab	\$1,000
69	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Wood Frame	71.5 m <sup>2</sup>	WTP Fulford houses the DAF water treatment system and is located on the same site as PST South Ridge. Fulford Water Treatment Plant (Main) is a single storey wood frame structure on a concrete slab on grade foundation system. No structural issues were noted.	Treatment Plant	Structure is a wood framed wall and roof system.	1	1	A	A	2011	50	2061		
70	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Cladding	71.5 m <sup>2</sup>	Exterior walls are covered in horizontal cementitious siding. The caulking between the painted plywood and the cement siding at the electrical mast has failed and requires replacement to prevent damage to finishes and supporting structure.	Treatment Plant	The building is clad in cement based siding with a rainscreen system.	2	1	A	A	2011	25	2036	Replace cement siding at electrical mast on facility.	\$2,000
71	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Openings, Exterior	71.5 m <sup>2</sup>	Door mutes are required to prevent door to frame contact. Door contactors for alarm system require replacement with roller type devices.	Treatment Plant	There are no windows in the building. Doors are insulated metal with metal frames and emergency hardware.	2	1	A	A	2011	25	2036	Install door mutes and replace roller type alarm system.	\$5,000
72	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Roof	71.5 m <sup>2</sup>	The roof system is sloped with asphalt shingle roofing and metal gutters. Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure. Rear gutter requires replacement due to damage.	Treatment Plant	Roof is an asphalt shingle system with metal gutters and downspouts.	2	1	A	A	2011	25	2036	Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure. Replace rear gutters.	\$10,000
73	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Finishes, Interior	71.5 m <sup>2</sup>	No issues were noted with interior finishes.	Treatment Plant	Walls and ceiling are covered in painted plywood sheathing. Floor is an exposed concrete slab.	1	1	A	A	2011	15	2026		
74	Fulford	WTP FULFORD	Structural	STR	STR, Structure, Cabinets	1	No issues were noted with the cabinets.	Treatment Plant	Cabinets are MDF with a laminate counter top.	1	1	A	N/A	2011	15	2026		
75	Fulford	WTP FULFORD	Structural	LAD	LAD, Stairs, Interior, Aluminum	1	No issues were noted with the interior stairs and landing. Access stairs are required to provide safe access to the building level from the parking area to prevent slipping in wet and/or freezing weather.	Treatment Plant	Aluminum stairs and landing are attached to the DAF packaged treatment system. There are no exterior stairs.	3	1	A	N/A	2011	25	2036		
76	Fulford	WTP FULFORD	Structural	RAI	RAI, Railing, Exterior	1	No issues were noted with exterior guardrails.	Treatment Plant	A pipe guardrail is installed on top of retaining wall to reduce falling hazard.	1	1	A	N/A	2011	25	2036		
77	Fulford	WTP FULFORD	Structural	RAI	RAI, Railing, Interior	1	No issues were noted with interior handrails / guardrails.	Treatment Plant	Aluminum handrails / guardrails are attached to the DAF packaged treatment system.	1	1	A	N/A	2011	25	2036		
78	Fulford	WTP FULFORD	Structural	DAV	DAV, Lifting Davit	0	Support for a lifting apparatus is required at ceiling level to lift the 80lb lid for the Saturator. Support for a confined space entry apparatus is required over the DAF treatment system to accommodate entry for cleaning and servicing.	Treatment Plant	There are no provisions for lifting.	4	1	A	N/A	2011	25	2036	Support for a lifting apparatus is required at ceiling level to lift the 80lb lid for the Saturator. Support for a confined space entry apparatus is required over the DAF treatment system to accommodate entry for cleaning and servicing.	\$25,000
79	Fulford	WTP FULFORD	Structural	HVAC	HVAC, Exhaust System	0	There is a requirement for a washroom facility on site. A mechanical exhaust system is required to extract blue green cyanotoxins produced by blue green algae in the summer months.	Treatment Plant	There is a wash up sink installed. There is no washroom facility. There is no building exhaust system.	4	1	A	N/A	2011	25	2036	There is a requirement for a washroom facility on site. A mechanical exhaust system is required to extract blue green cyanotoxins produced by blue green algae in the summer months.	\$6,000
80	Fulford	WTP FULFORD	Structural	ELC	ELC, Heater	1	Heating is provided by electric unit heaters and baseboard heaters. There is no emergency generator to operate emergency systems in case of a power outage. See electrical for comments.	Treatment Plant	The building is heated with electric unit heaters.	1	1	A	N/A	2011	25	2036		
81	Fulford	WTP FULFORD	Structural	SAF	SHO/EXT, emergency eye wash station, fire extinguisher	1	Emergency wash station and fire extinguisher are serviced on a regular basis. There is a hot water tank to provide tempered water to the emergency eye wash station and wash up area.	Treatment Plant	There is a packaged emergency deluge shower and eye wash station. There is a fire extinguisher installed.	1	1	A	N/A	2011	25	2036	Install hot water tank to temper water provided for eye wash station.	\$3,000
Asset Physical Condition Rating:		1. Very Good: Asset is physically sound, performing its function as originally intended. Generally a new or recently rehabilitated. Only planned maintenance required				Asset Criticality Rating:	1. Non-critical: Asset failure would not result in immediate problem.		Data Confidence Grading System	A - Highly Reliable: Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete. Accuracy estimated +- 2%			Capacity Adaptation Ranking System	A - Excellent: The asset has the capacity to meet long-term demand up to 10 years				
		2. Asset Standby Equipment Available: Asset failure would result in replacement/repairs which could be completed relatively quickly.		B - Reliable: Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, i.e. some data is old, missing, extrapolated. Dataset is complete. Accuracy estimated +- 10%			B - Good: The asset has the capacity to meet medium-term demand up to 5 years											
		3. Fair: Asset is showing signs of deterioration, performing at a lower level that originally intended. Some components are becoming physically deficient. Required maintenance costs exceed acceptable standards and increasing. Asset within the later stages of expected life.		C - Uncertain: Data is based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated. Dataset is substantially complete but up to 50% is extrapolated. Accuracy estimated +- 25%			C - Moderate: The asset has the capacity to meet short-term growth demands.											
		4. Poor: Asset is showing significant signs of deterioration, performance much lower than originally intended. Majority of asset is physically deficient. Required maintenance costs significantly exceed acceptable standards. Asset is approaching end of expected life		D - Very Uncertain: Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated +- 40%			D - Borderline: The asset has the capacity to meet short-term growth demands but experiences some shortfalls.											
		5. Very Poor: Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance coasts are unacceptable. Replacement / major refurbishment required		E - Unknown: None or very little data held			E - Fail: The asset capacity is not meeting its current demand and experiencing frequent shortfalls.											



Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
PST Sunnyside - 122 Sunnyside Drive																		
82	Fulford	PST SUNNYSIDE	Mechanical	PS	PS, Pressure Station, Sunnyside PS	1	The PS is housing duplex pumps. Access to the PS is restricted due to confined space entry. The pump flow rate is 2.3 L/sec due to shaved down impellers. Replacement of impellers is required to match the WTP processing capacity.	Valve Chamber	Booster lift station for raw water supply to the Fulford WTP	1	2	A	A				Replace impellers in pumps.	\$6,000
83	Fulford	PST SUNNYSIDE	Health & Safety	RAI	RAI, Railing	1	No protective barrier for a ~2 ft drop to the east of the electrical cabinet. A 4 m metal rail should be installed.	Valve Chamber	Railing	5	1	A	N/A				No protective barrier for a ~2 ft drop to the east of the electrical cabinet. A 4 m metal rail should be installed.	\$3,000
84	Fulford	PST SUNNYSIDE	Health & Safety	ACC	ACC, Access Hatch, Manhole Frame & Lid	1	Operations staff (NSSWD) noted that they bring their tripod and portable blower for access. CRD should have their own.	Valve Chamber	CFE Tripod and Winch	4	1	A	A				Recommend purchasing portable CFE tripod and winch to use at this station and others.	\$5,000
85	Fulford	PST SUNNYSIDE	Electrical	ELC	ELC, 70 Amp Combination Main & TVSS 120/240 Volt 1 phase	1	Pole mounted Hydro Meter. Tree trimming required around Hydro Incoming pole and BC Hydro meter	Valve Chamber	Electrical ServiceTVSS and BC Hydro meter	2	5	A	A	2010	30	2040	Tree trimming required around Hydro Incoming pole and BC Hydro meter	\$2,000
86	Fulford	PST SUNNYSIDE	Electrical	STR	STR, Structure, Kiosk Enclosure	1	Requires housekeeping and Preventative Maintenance routines	Valve Chamber	Aluminum Kiosk	2	5	A	A	2010	30	2040	Provide housekeeping and Preventative Maintenance routines	\$2,500
87	Fulford	PST SUNNYSIDE	Electrical	STR	STR, Structure, Foundation, Kiosk	1	Mounted to underground Dry Pit	Valve Chamber	Kiosk foundation / base	2	5	A	A					
88	Fulford	PST SUNNYSIDE	Electrical	SCA	SCA, SCADA Pack 350	1		Valve Chamber	Site control process Scada & Scada communications	2	5	A	A	2010	30	2040		
89	Fulford	PST SUNNYSIDE	Electrical	ANT	ANT, Antenna, GE Transnet 900 MHZ	1		Valve Chamber	Communications radio antenna	2	5	A	A	2010	30	2040		
90	Fulford	PST SUNNYSIDE	Electrical	VFD	VFD, Variable Frequency Drive, Booster P1 and P2	2	Eaton VFD, MVX model no longer supported	Valve Chamber	Booster Pump VFD	2	2	A	A	2010	15	2025	Eaton VFD, MVX model no longer supported . Investigate alternatives	\$5,000
91	Fulford	PST SUNNYSIDE	Electrical	FLT	FLT, Process Instruments, Float Switch	1		Valve Chamber	Chamber Flood Float	2	5	A	A	2010/2016	15	2025		
92	Fulford	PST SUNNYSIDE	Electrical	LIT	LIT, Light, Fluorescent strip 3'	1		Valve Chamber	Lighting	2	1	A	N/A	2010	10	2020		
93	Fulford	PST SUNNYSIDE	Electrical	LIT	LIT, Light, Begelli Fluorescent 2 lamp T8 Vapour Proof	2	T8 Lamps considered matured, LED replacement should be considered	Valve Chamber	Lighting	2	1	A	N/A	2010	10	2020	Replace T8 Lamps with LED Lighting.	\$300
94	Fulford	PST SUNNYSIDE	Electrical	REC	REC, Receptacles	1		Valve Chamber	Receptacles	2	1	A	A	2010	10	2020		
95	Fulford	PST SUNNYSIDE	Structural	SIT	SIT, Overall Site	1	Ongoing maintenance is being performed by CRD personnel. Ground cover is maintained on a regular basis. Tree trimming is required to allow access to the PCS and to clear the electrical meter located on the adjacent power pole.	Valve Chamber	Site is sloping and adjacent to a deep roadside ditch.	2	1	A	N/A	1900	50	1950	Tree trimming is required to allow access to the PCS and to clear the electrical meter located on the adjacent power pole.	\$2,000
96	Fulford	PST SUNNYSIDE	Structural	PKG	PKG, Parking Lot	1	N/A	Valve Chamber	Parking is on the side of Sunnyside Drive.	1	1	A	N/A	1900	50	1950		
97	Fulford	PST SUNNYSIDE	Structural	SER	SER, Service, Stormwater	1	No service issues were noted.	Valve Chamber	Stormwater exits the site into a ditch along Sunnyside Drive.	2	1	A	N/A	1900	50	1950		
98	Fulford	PST SUNNYSIDE	Structural	STR	STR, Structure, Foundation , Concrete	1	No foundation issues were noted.	Valve Chamber	Foundation is a reinforced concrete foundation and slab on grade system.	2	1	A	A	1900	50	1950		
99	Fulford	PST SUNNYSIDE	Structural	STR	STR, Structure, Underground Enclosure, Concrete	1	PRS Sunnyside is a reinforced concrete underground enclosure with a suspended slab concrete lid.	Valve Chamber	There is no structure over tank.	1	1	A	A	1900	50	1950		
100	Fulford	PST SUNNYSIDE	Structural	STR	STR, Structure, Openings, Exterior	1	No issues noted on access hatch.	Valve Chamber	Access to the tank is by way of a secured access hatch.	2	1	A	A	1900	25	1925		
101	Fulford	PST SUNNYSIDE	Structural	STR	STR, Structure, Roof	1	No issues were noted with the tank cover.	Valve Chamber	The tank is covered with a suspended slab roof/cover.	3	1	A	A	1900	25	1925		
102	Fulford	PST SUNNYSIDE	Structural	STR	STR, Structure, Finishes, Interior	1	No issues were noted with interior finishes.	Valve Chamber	Interior walls are exposed concrete.	1	1	A	A	1900	15	1915		
103	Fulford	PST SUNNYSIDE	Structural	LAD	LAD, Ladder, Aluminum	1	No issues were noted with the ladder.	Valve Chamber	Access into the tank is by way of an aluminum ladder with a safety pole.	3	1	A	N/A	1900	25	1925		
104	Fulford	PST SUNNYSIDE	Structural	RAI	RAI, Railing, Exterior	1	Install a full height guardrail that still allows for access but prevents a fall hazard when working on the tank.	Valve Chamber	There is a low height railing located adjacent to the access hatch.	1	1	A	N/A	1900	25	1925	Install a full height guardrail that still allows for access but prevents a fall hazard when working on the tank.	Refer to Item (83)
105	Fulford	PST SUNNYSIDE	Structural	DAV	DAV, Lifting Davit	0	Provide securing for a portable tri-pod device.	Valve Chamber	There are no provisions for confined space entry.	4	1	A	N/A	1900	25	1925	Provide mount area for a portable tri-pod device.	Refer to Item (84)
106	Fulford	PST SUNNYSIDE	Structural	ELC	ELC, Heater	1	The controls are located in a premanufactured metal enclosure. See electrical for comments.	Valve Chamber	The tank is heated with an electric baseboard heater.	1	1	A	N/A	1900	25	1925		
	Asset Physical Condition Rating:	1. Very Good: Asset is physically sound, performing its function as originally intended. Generally a new or recently rehabilitated. Only planned maintenance required				Asset Criticality Rating:	1. Non-critical: Asset failure would not result in immediate problem.		Data Confidence Grading System	A - Highly Reliable: Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete. Accuracy estimated +- 2%				Capacity Adaptation Ranking System	A - Excellent: The asset has the capacity to meet long-term demand up to 10 years			
		2. Good: Asset is physically sound, performing its function as originally intended. Required maintenance costs as within acceptable standards but increasing. Asset has been used for some time but is within mid stage of expected life.					2. Asset Standby Equipment Available: Asset failure would result in replacement/repairs which could be completed relatively quickly.			B - Reliable: Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, i.e. some data is old, missing, extrapolated. Dataset is complete. Accuracy estimated +- 10%					B - Good: The asset has the capacity to meet medium-term demand up to 5 years			
		3. Fair: Asset is showing signs of deterioration, performing at a lower level that originally intended. Some components are becoming physically deficient. Required maintenance costs exceed acceptable standards and increasing. Asset within the later stages of expected life.					3. No equipment redundancy: Asset failure could result in moderately prolonged service interruption. Asset standby equipment not readily available.			C - Uncertain: Data is based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated. Dataset is substantially complete but up to 50% is extrapolated. Accuracy estimated +- 25%					C - Moderate: The asset has the capacity to meet short-term growth demands.			
		4. Poor: Asset is showing significant signs of deterioration, performance much lower than originally intended. Majority of asset is physically deficient. Required maintenance costs significantly exceed acceptable standards. Asset is approaching end of expected life					4. No Equipment Redundancy & Failure of equipment not monitored by alarm: Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online			D - Very Uncertain: Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated +- 40%					D - Borderline: The asset has the capacity to meet short-term growth demands but experiences some shortfalls.			
		5. Very Poor: Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance coasts are unacceptable. Replacement / major refurbishment required					5. No Equipment Redundancy & Failure of equipment not monitored by alarm and/or immediate Health & Safety Concerns: Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online. Asset essential to health and safety requirements.			E - Unknown: None or very little data held					E - Fail: The asset capacity is not meeting its current demand and experiencing frequent shortfalls.			



Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
PRS Sunnyside - Sunny Side Drive																		
107	Fulford	PRS SUNNYSIDE	Mechanical	PRV	PRV, Pressure Reducing Valve, Sunnyside PRV	1	In-line strainers are not installed in front of PRVs for protection from fine solids. Signs of corrosion are visible from piping.	Valve Building	PRV assembly in dual bypass/main configuration.	3	1	A	A				Install in-line strainers in front of PRV.	\$5,000
																	Replace piping	\$7,000
108	Fulford	PRS SUNNYSIDE	Health & Safety	EXT	EXT, Fire Extinguisher	1	No fire extinguisher observed / fire extinguisher required. Fire hydrant directly adjacent to PRS building.	Valve Building	Fire Extinguisher	5	4	A	N/A				Inspect Fire Extinguisher and replace if required.	\$200
109	Fulford	PRS SUNNYSIDE	Structural	SIT	SIT, Overall Site	1	Ongoing maintenance is being performed by CRD personnel. Ground cover is maintained on a regular basis. Adjacent bushes require trimming to prevent damage to the wall system and finishes. Maintenance required on surrounding vegetation, including branches around overhead telecommunications.	Valve Building	Site is flat and covered with gravel.	2	1	A	N/A	2011	50	2061	Adjacent bushes require trimming to prevent damage to the wall system and finishes. Maintenance required on surrounding vegetation, including branches around overhead telecommunications.	\$2,000
110	Fulford	PRS SUNNYSIDE	Structural	DWY	DWY, Driveway, Gravel	1	Gravel driveway is well maintained and accessible.	Valve Building	Gravel driveway is part of the overall site.	1	1	A	N/A	2011	50	2061		
111	Fulford	PRS SUNNYSIDE	Structural	PKG	PKY, Parking Lot	1	Gravel driveway is well maintained and accessible.	Valve Building	Parking is part of the driveway.	1	1	A	N/A	2011	50	2061		
112	Fulford	PRS SUNNYSIDE	Structural	SER	SER, Service, Stormwater	1	No servicing issues were noted.	Valve Building	Stormwater exits the site into a ditch along Sunnyside Drive.	1	1	A	N/A	2011	50	2061		
113	Fulford	PRS SUNNYSIDE	Structural	FEN	FEN, Fence, Perimeter	0	Perimeter fencing is required to secure the pump system.	Valve Building	There is no perimeter fencing around the site.	5	1	A	N/A	2011	25	2036	Perimeter fencing is required to secure the pump system.	\$15,000
114	Fulford	PRS SUNNYSIDE	Structural	STR	STR, Structure, Foundation	10.3 m²	No issues were noted with the foundation.	Valve Building	Foundation is a reinforced concrete foundation and slab on grade system.	1	1	A	A	2011	50	2061		
115	Fulford	PRS SUNNYSIDE	Structural	STR	STR, Structure, Wood Frame	10.3 m²	PST Sunnyside is a single storey wood frame structure on a concrete slab on grade foundation system.	Valve Building	Structure is a wood framed wall and roof system.	1	1	A	A	2011	50	2061		
116	Fulford	PRS SUNNYSIDE	Structural	STR	STR, Structure, Cladding	10.3 m²	Exterior walls are covered in horizontal cementitious siding. No cladding issues were noted.	Valve Building	The building is clad in cement based siding with a rainscreen system.	1	1	A	A	2011	25	2036		
117	Fulford	PRS SUNNYSIDE	Structural	STR	STR, Structure, Openings, Exterior	10.3 m²	Door requires painting and replacement of door sweep and weather stripping to prevent insects from entering the building. Prepare and paint all surfaces to the Master Painter Institute (MPI) Standards.	Valve Building	There are no windows in the building. Door is insulated metal with metal frame and emergency hardware.	2	1	A	A	2011	25	2036	Door requires painting and replacement of door sweep and weather stripping to prevent insects from entering the building. Prepare and paint all surfaces to the Master Painter Institute (MPI) Standards.	\$1,000
118	Fulford	PRS SUNNYSIDE	Structural	STR	STR, Structure, Roof	10.3 m²	The roof system is sloped with asphalt shingle roofing and metal gutters. Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure.	Valve Building	Roof is an asphalt shingle system with metal gutters and downspouts.	2	1	A	A	2011	25	2036	Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure.	\$2,500
119	Fulford	PRS SUNNYSIDE	Structural	STR	STR, Structure, Finishes, Interior	10.3 m²	Interior requires painting to prevent damage to the plywood finishes in case of a leak in the pumping system. Prepare and paint all surfaces to the Master Painter Institute (MPI) Standards.	Valve Building	Walls and ceiling are covered in painted plywood sheathing. Floor is an exposed concrete slab.	3	1	A	A	2011	15	2026	Interior requires painting to prevent damage to the plywood finishes in case of a leak in the pumping system. Prepare and paint all surfaces to the Master Painter Institute (MPI) Standards.	\$3,000
120	Fulford	PRS SUNNYSIDE	Structural	SAF	EXT, Fire Extinguisher	0	Installation of a fire extinguisher is required.	Valve Building	There are no safety devices installed.	3	1	A	N/A	2011	25	2036	Installation of a fire extinguisher is required.	\$500
Asset Physical Condition Rating:		1. <b>Very Good:</b> Asset is physically sound, performing its function as originally intended. Generally a new or recently rehabilitated. Only planned maintenance required				Asset Criticality Rating:	1. <b>Non-critical:</b> Asset failure would not result in immediate problem.		Data Confidence Grading System	A - <b>Highly Reliable:</b> Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete. Accuracy estimated +- 2%			Capacity Adaptation Ranking System			A - <b>Excellent:</b> The asset has the capacity to meet long-term demand up to 10 years		
		2. <b>Good:</b> Asset is physically sound, performing its function as originally intended. Required maintenance costs as within acceptable standards but increasing. Asset has been used for some time but is within mid stage of expected life.					2. <b>Asset Standby Equipment Available:</b> Asset failure would result in replacement/repairs which could be completed relatively quickly.			B - <b>Reliable:</b> Data based on sound records, procedures , investigations and analysis, documented properly but has minor shortcomings, i.e. some data is old, missing, extrapolated. Dataset is complete. Accuracy estimated +- 10%						B - <b>Good:</b> The asset has the capacity to meet medium-term demand up to 5 years		
		3. <b>Fair:</b> Asset is showing signs of deterioration, performing at a lower level that originally intended. Some components are becoming physically deficient. Required maintenance costs exceed acceptable standards and increasing. Asset within the later stages of expected life.					3. <b>No equipment redundancy:</b> Asset failure could result in moderately prolonged service interruption. Asset standby equipment not readily available.			C - <b>Uncertain:</b> Data is based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated. Dataset is substantially complete but up to 50% is extrapolated. Accuracy estimated +- 25%						C - <b>Moderate:</b> The asset has the capacity to meet short-term growth demands.		
		4. <b>Poor:</b> Asset is showing significant signs of deterioration, performance much lower than originally intended. Majority of asset is physically deficient. Required maintenance costs significantly exceed acceptable standards. Asset is approaching end of expected life					4. <b>No Equipment Redundancy &amp; Failure of equipment not monitored by alarm:</b> Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online			D - <b>Very Uncertain:</b> Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated +- 40%						D - <b>Borderline:</b> The asset has the capacity to meet short-term growth demands but experiences some shortfalls.		
		5. <b>Very Poor:</b> Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance coasts are unacceptable. Replacement / major refurbishment required					5. <b>No Equipment Redundancy &amp; Failure of equipment not monitored by alarm and/or immediate Health &amp; Safety Concerns:</b> Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online. Asset essential to health and safety requirements.			E - <b>Unknown:</b> None or very little data held						E - <b>Fail:</b> The asset capacity is not meeting its current demand and experiencing frequent shortfalls.		

Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
Distribution Fulford																		
121	Fulford	DISTRIBUTION FULFORD	Civil	VLV	VLV, Air Valves	5	All air valves on supply main not observed / visited - limited access. Trail should have vegetation maintenance for access.	from Weston Lake to PST Sunnyside	Air valves on supply main	2	3	A	A	2008			Trail should have vegetation maintenance for access.	\$2,000
122	Fulford	DISTRIBUTION FULFORD	Civil	STP	STP, Standpipe	12	All standpipes should have cap on outlet. Trail should have vegetation maintenance for access.	from Weston Lake to PST Sunnyside	Standpipes along supply main	2	1	A	A	2008	50	2058	All standpipes should have cap on outlet.	\$500
123	Fulford	DISTRIBUTION FULFORD	Civil	INT	INT, Intake Strainer, stainless steel	1	Strainer recently maintained / cleaned. Need underwater diving inspections, never done.	Weston Lake	Water intake strainer at water source	1	4	A	A	2008	50	2058	Strainer for water intake requires inspection. Underwater inspection on raw water intake should be done	\$10,000
124	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, Raw, 100 mm, PVC	~2,215 m	Watermain should be flushed annually. Air valves (5 ea.) should be replaced	from Weston Lake to PST Sunnyside	Supply watermain	2	5	A	A	2008	75	2083	Air valves should be replaced	\$9,000
125	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, Raw, 150 mm, PVC, C900, Blue Brute	~730 m	Watermain should be flushed annually.	from PST Sunnyside to WTP Fulford	Supply watermain	2	5	A	A	2008	75	2083		
126	Fulford	DISTRIBUTION FULFORD	Civil	BLD	BLD, Building, Raw, Meter	1	Building should be removed and underground chamber installed to contain raw water meter.	from Weston Lake to PST Sunnyside	Building for raw water meter	5	1	A	A		30		Demolish and replace existing building with underground chamber,	\$25,000
127	Fulford	DISTRIBUTION FULFORD	Civil	SER	SER, Service, Water Service	1	Water service to 341 Reynolds Rd directly from RAW supply main with no treatment. Suggest CRD do further investigation to determine if water is to be treated or not or if the homeowner has a private treatment system.	341 Reynolds Rd	Watermain service	5	5	A	D		50		Water service to 341 Reynolds Rd directly from RAW supply main with no treatment. Suggest CRD do further investigation to determine if water is to be treated or not or if the homeowner has a private treatment system.	\$5,000
128	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, 50 mm, AC	123 m	- Watermain should have maintenance flushing schedule.	Local Water Service	Distribution watermain	2	5	A	D	1980	50	2030	Watermain to be replaced with new services (+ 6 years). Cost based on \$500 /m	\$61,500
129	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, 100 mm, AC	4,391 m	- Watermain should have maintenance flushing schedule.	Local Water Service	Distribution watermain	2	5	A	D	1970	50	2020	Watermain to be replaced with new services (< 1 year). Cost based on \$650 /m	\$2,900,000
130	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, 50 mm, PVC	68 m	- Watermain should have maintenance flushing schedule.	Local Water Service	Distribution watermain	2	5	A	D	1980	75	2055		
131	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, 50 mm, PVC	46 m	- Watermain should have maintenance flushing schedule.	Local Water Service	Distribution watermain	2	5	A	D	2006	75	2081		
132	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, 100 mm, PVC	1,126 m	- Watermain should have maintenance flushing schedule.	Local Water Service	Distribution watermain	2	5	A	D	2008	75	2083		
133	Fulford	DISTRIBUTION FULFORD	Civil	WM	WM, Watermain, 150 mm, PVC	937 m	- Watermain should have maintenance flushing schedule.	Local Water Service	Distribution watermain	2	5	A	A	2006	75	2081		
134	Fulford	DISTRIBUTION FULFORD	Civil	HYD	HYD, Hydrant	4	- Hydrants should be exercised annually	Local Water Service	Hydrants along distribution main	2	1	A	A					
135	Fulford	DISTRIBUTION FULFORD	Civil	STP	STP, Standpipe	12	- All standpipes should have cap on outlet	Local Water Service	Standpipes along distribution main	2	1	A	A				All standpipes should have cap on outlet.	\$500
136	Fulford	DISTRIBUTION FULFORD	Health & Safety	SHO	SHO, Eyewash, Portable	1	Distilled water to be replaced on a regular basis.	Supply Main Building Reynolds Rd.	Personal protective equipment	1	1	A	N/A					
137	Fulford	DISTRIBUTION FULFORD	Electrical	ELC	ELC, 60 Amp customer owned pole, BC Hydro meter 120/240 Volt 1 phase	1	Pole mounted Hydro Meter. Customer owned Pole mounted service has safety concerns with buried cable to feed building	Supply Main Building Reynolds Rd.	Electrical service and BC Hydro meter	5	1	A	A	<1991	25	2016		
138	Fulford	DISTRIBUTION FULFORD	Electrical	ELC	ELC, 60 Amp Panel120/240 Volt 1 phase	1	External Mounted Panelboard. External mounted panel has safety concerns with moisture, access and security, vandalism and poor condition	Supply Main Building Reynolds Rd.	Electrical Panel main service	5	1	A	A	<1991	25	2016		
139	Fulford	DISTRIBUTION FULFORD	Electrical	ELC	ELC, Light, Heat, Receptacles	1	Equipment severely corroded	Supply Main Building Reynolds Rd.		5	1	A	A	<1991	15	2006	Replace lighting, heating, and receptacles in building.	\$1,000
140	Fulford	DISTRIBUTION FULFORD	Electrical	SAF	SAF, Safety Code	3	Electrical condition of building lights, heat and receptacles are in very poor condition and have safety concern, grounding and corrosion Recommend removal or replacement.	Supply Main Building Reynolds Rd.				A	A				Replace severely corroded equipment	\$5,000
141	Fulford	DISTRIBUTION FULFORD	Structural	SIT	SIT, Overall Site	1	Ongoing maintenance is being performed by CRD personnel around the site. Ground cover is maintained on a regular basis.	Supply Main Building Reynolds Rd.	Site is flat approximately 40m into the bushes.	1	1	A	N/A	1900	50	1950		
142	Fulford	DISTRIBUTION FULFORD	Structural	PTH	PTH, Access Pathway	1	Access path is well maintained and accessible.	Supply Main Building Reynolds Rd.	There is no driveway. Access is by way of a path.	1	1	A	N/A	1900	50	1950		
143	Fulford	DISTRIBUTION FULFORD	Structural	PKG	PKG, Parking Lot	1	N/A	Supply Main Building Reynolds Rd.	Parking is on Reynolds Road.	1	1	A	N/A	1900	50	1950		
144	Fulford	DISTRIBUTION FULFORD	Structural	SER	SER, Service, Stormwater	1	N/A	Supply Main Building Reynolds Rd.	Storm drainage is to the adjacent swamp area.	1	1	A	N/A	1900	50	1950		
145	Fulford	DISTRIBUTION FULFORD	Structural	STR	STR, Structure, Foundation, Concrete	6.0 m²	No issues were noted with the foundation. Demolish building.	Supply Main Building Reynolds Rd.	Foundation is a reinforced concrete foundation and slab on grade system.	1	1	A	A	1900	50	1950	Demolish existing building	Refer to Item (126)
146	Fulford	DISTRIBUTION FULFORD	Structural	STR	STR, Structure, Wood Frame	6.0 m²	Reynolds road strainer building is a single storey wood frame structure on a concrete slab on grade foundation system. Building is rotting and has exceeded its estimated service life. Demolish building.	Supply Main Building Reynolds Rd.	Structure is a wood framed wall and roof system.	5	1	A	A	1900	50	1950	Demolish existing building	Refer to Item (126)
147	Fulford	DISTRIBUTION FULFORD	Structural	STR	STR, Structure, Cladding	6.0 m²	Exterior walls are covered in vertical cedar siding. Cladding is rotting and has exceeded its estimated service life. Demolish building.	Supply Main Building Reynolds Rd.	The building is clad in vertical cedar siding.	5	1	A	A	1900	25	1925	Demolish existing building	Refer to Item (126)
148	Fulford	DISTRIBUTION FULFORD	Structural	STR	STR, Structure, Openings, Exterior	6.0 m²	N/A	Supply Main Building Reynolds Rd.	The one window in the building has been boarded over. The entry door is wood.	5	1	A	A	1900	25	1925		
149	Fulford	DISTRIBUTION FULFORD	Structural	STR	STR, Structure, Roof	6.0 m²	The roof system is sloped asphalt with no gutters. Roof should be demolished as part of the overall building.	Supply Main Building Reynolds Rd.	Roof is covered with a tarp and leaking.	5	1	A	A	1900	25	1925	Demolish existing building	Refer to Item (126)



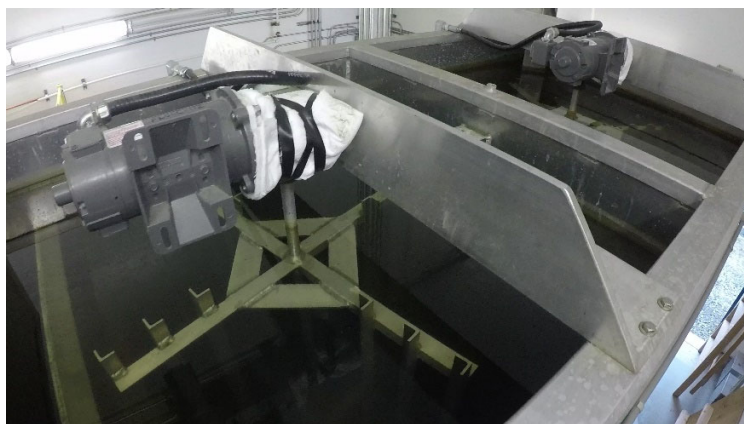
Item No.	Water System	Asset Name	Component	Object types	Equipment Identifier			Equipment Location		Asset Ratings				Asset Service Life			Capital Project Recommendations and Cost Estimate	
					Equipment Description	Quantity	Comments	Location	System Description	Physical Condition	Criticality	Data Confidence	Capacity Adaptation	Date Installed	Service Life	Anticipated Replacement / Refurbishment Date	Recommended Upgrade / Replacement / Investigation Capital Projects	Estimated cost (in 2019 dollars)
150	Fulford	DISTRIBUTION FULFORD	Structural	STR	STR, Structure, Finishes, Interior	6.0 m²	Interior of building is infested with rodents and is unsafe to enter. Building demolition is recommended.	Supply Main Building Reynolds Rd.	Interior finishes are not painted and are damaged.	5	1	A	A	1900	15	1915	Demolish existing building	Refer to Item (126)
151	Fulford	DISTRIBUTION FULFORD	Structural	LAD	LAD, Stairs, Interior, Wooden	1	No issues were noted with the stairs.	Supply Main Building Reynolds Rd.	There is a small set of wooden stairs to access lower floor area.	3	1	A	N/A	1900	25	1925		
152	Fulford	DISTRIBUTION FULFORD	Structural	ELC	ELC, Heater	1	There is a portable electric heater in the building. Building demolition is recommended.	Supply Main Building Reynolds Rd.	Heating of the building is by way of a portable space heater.	5	1	A	N/A	1900	25	1925		
153	Fulford	DISTRIBUTION FULFORD	Structural	SAF	SAF, Safety, Rodents	1	Building demolition is recommended.	Supply Main Building Reynolds Rd.	Rodent infestation makes the building unsafe to enter without personal protective equipment.	5	1	A	N/A	1900	25	1925		
Asset Physical Condition Rating:		1. <b>Very Good:</b> Asset is physically sound, performing its function as originally intended. Generally a new or recently rehabilitated. Only planned maintenance required					Asset Criticality Rating:	1. <b>Non-critical:</b> Asset failure would not result in immediate problem.		Data Confidence Grading System	A - <b>Highly Reliable:</b> Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete. Accuracy estimated +/- 2%			Capacity Adaptation Ranking System	A - <b>Excellent:</b> The asset has the capacity to meet long-term demand up to 10 years			
		2. <b>Good:</b> Asset is physically sound, performing its function as originally intended. Required maintenance costs as within acceptable standards but increasing. Asset has been used for some time but is within mid stage of expected life.						2. <b>Asset Standby Equipment Available:</b> Asset failure would result in replacement/repairs which could be completed relatively quickly.			B - <b>Reliable:</b> Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, i.e. some data is old, missing, extrapolated. Dataset is complete. Accuracy estimated +/- 10%				B - <b>Good:</b> The asset has the capacity to meet medium-term demand up to 5 years			
		3. <b>Fair:</b> Asset is showing signs of deterioration, performing at a lower level that originally intended. Some components are becoming physically deficient. Required maintenance costs exceed acceptable standards and increasing. Asset within the later stages of expected life.						3. <b>No equipment redundancy:</b> Asset failure could result in moderately prolonged service interruption. Asset standby equipment not readily available.			C - <b>Uncertain:</b> Data is based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated. Dataset is substantially complete but up to 50% is extrapolated. Accuracy estimated +/- 25%				C - <b>Moderate:</b> The asset has the capacity to meet short-term growth demands.			
		4. <b>Poor:</b> Asset is showing significant signs of deterioration, performance much lower than originally intended. Majority of asset is physically deficient. Required maintenance costs significantly exceed acceptable standards. Asset is approaching end of expected life						4. <b>No Equipment Redundancy &amp; Failure of equipment not monitored by alarm:</b> Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online			D - <b>Very Uncertain:</b> Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy estimated +/- 40%				D - <b>Borderline:</b> The asset has the capacity to meet short-term growth demands but experiences some shortfalls.			
		5. <b>Very Poor:</b> Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance coasts are unacceptable. Replacement / major refurbishment required						5. <b>No Equipment Redundancy &amp; Failure of equipment not monitored by alarm and/or immediate Health &amp; Safety Concerns:</b> Asset Failure could cause prolonged system interruption. Significant time and cost to get system back online. Asset essential to health and safety requirements.			E - <b>Unknown:</b> None or very little data held				E - <b>Fail:</b> The asset capacity is not meeting its current demand and experiencing frequent shortfalls.			

# APPENDIX D

## FULFORD ASSET PHOTO OBSERVATION SHEETS

Local Water Service		
FULFORD LOCAL WATER SERVICE		

Asset	Component	Location
WTP Fulford	Mechanical	203 South Ridge Drive



Description:

Fulford Water Treatment Plant

Observation:

Top of the rapid mix and flocculation tanks. Both mixer motors are leaking. Temporary fix implemented by wrapping the motors with fabric cloths. Drip trays are required to prevent oil from dripping into the rapid mix/flocculation tanks.



Description:

Fulford Water Treatment Plant

Observation:

Top of the rapid mix and flocculation tanks. Both mixer motors are leaking. Temporary fix implemented by wrapping the motors with fabric cloths. Drip trays are required to prevent oil from dripping into the rapid mix/flocculation tanks.



Description:

Fulford Water Treatment Plant



Observation:

Top of the dissolved air flotation (DAF) unit. Single unit only.

The WTP processing capacity is 4.5 L/sec (16.2 m<sup>3</sup>/hr).



Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>

	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Observation:
	DAF duplex pressurization pumps and duplex compressor sitting on top of the air tank. Vertical pressurization vessel (blue) is seen on the left-hand side. The assembly is an integral part of the package WTP.
	Observation:
	DAF outlet manifold on the right-hand side in the background and air scour blower used for filter backwash in the foreground. DAF pressurization system on the left-hand side in the background is an integral part of the package WTP.
	Observation:
	Pressurized single UV disinfection module.

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>

	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Observation:
	DAF outlet manifold with the original valve actuators recently replaced with new Rotork actuators (blue).
	Observation:
	Effluent (filter) turbidimeters; one for each filter.
	Observation:
	Coagulant storage tank (right-hand side) and coagulant mix tank (left-hand side).



Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>

	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Observation:
	Duplex chemical (coagulant) dosing pumps.
	Observation:
	Emergency eye wash and shower station located next to chemical storage/mix tanks.
	Observation:
	Coagulant storage tank (right-hand side) and coagulant mix tank (left-hand side).

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>

	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Observation:
	EOCP facility classification as a small water system.
	Observation:
	External tank collecting DAF float/scum.
	Observation:
	External tanks.

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>



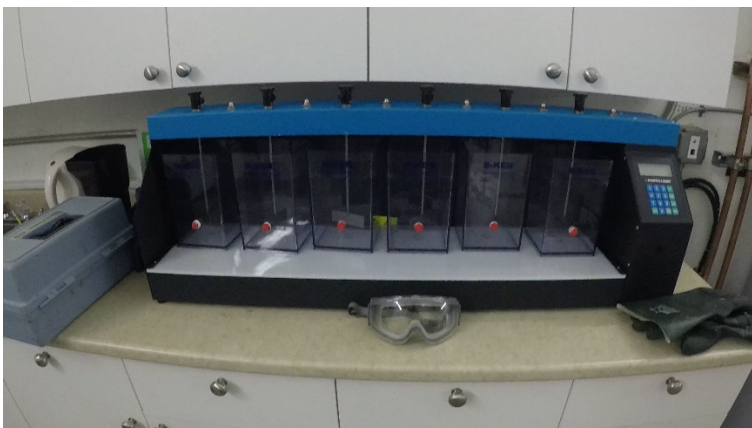
Description:  
Fulford Water Treatment Plant

Observation:  
Raw water influent flow meter.



Description:  
Fulford Water Treatment Plant

Observation:  
Process control panel with HMI. The WTP has PLC control system for fully automatic operation.






Description:  
Fulford Water Treatment Plant




Observation:  
Jar testing equipment shared with Beddis WTP.



Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>

	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Observation:
	Loop system for the clear well and chlorine monitoring equipment.
	Observation:
	Chlorine room with a single chlorine pump and eye wash station (green) on the right-hand side.
	Observation:
	Single chlorine recirculation pump.

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>203 South Ridge Drive</b>

	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Description:
	Fulford Water Treatment Plant
	Observation:
	Duplex effluent pumps enclosed in a sound insulation box.
	Observation:
	Duplex backwash and rinse water recycle pumps.
	Observation:
	Duplex effluent filters with automatic valves.  The WTP processing capacity is 4.5 L/sec (16.2 m <sup>3</sup> /hr).


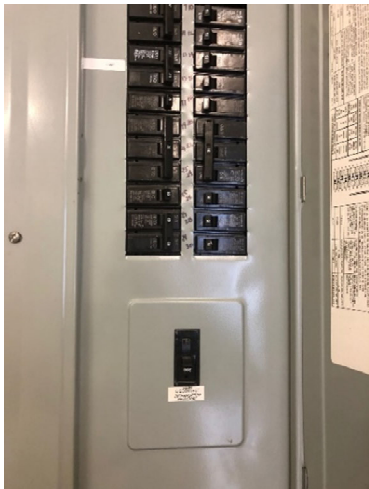

Asset	Component	Location
<b>WTP Fulford</b>	<b>Civil</b>	<b>203 South Ridge Drive</b>



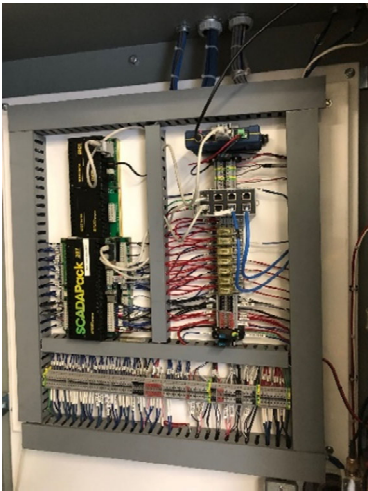
	Description:
	Eyewash and Drench Shower
	Observation: Eyewash and drench shower station too situated close to filing cabinet. Suggest to relocation filing cabinet.
	Description:
	Isopac Containers
	Observation: Containers to have dedicated storage and free of tripping hazards.
	Description:
	Fire Extinguisher
	Observation: Fire extinguisher is expired and requires inspection.
	CRD Personnel Observation:
	No issues noted



Asset	Component	Location
<b>WTP Fulford</b>	<b>Electrical</b>	<b>203 South Ridge Drive</b>




	Description:
	DAF Process Control Panel
	Observation: Safety concerns, no ability to reset motor overloads without opening the Control Panel
	Description:
	Electrical Main Service Panel
	Observation: Panel Directory needs to be finalized
	Description:
	DC UPS
	Observation: No issues noted
	CRD Personnel Observation:
	No issues noted

Asset	Component	Location
<b>WTP Fulford</b>	<b>Electrical</b>	<b>203 South Ridge Drive</b>
	Description:	AC UPS
	Observation:	No issues noted
	CRD Personnel Observation:	No issues noted
	Description:	Surge Suppression TVSS
	Observation:	No issues noted
	CRD Personnel Observation:	No issues noted
	Description:	Process Scada and Communications
	Observation:	No issues noted
	CRD Personnel Observation:	No issues noted






Asset	Component	Location
<b>WTP Fulford</b>	<b>Electrical</b>	<b>203 South Ridge Drive</b>


  

	Description:
	Main Service and Radio Mast
	Observation:
	No issues noted
	Description:
	Fan Forced Unit Heater
	Observation:
	No issues noted
	Description:
	Site Main Incoming Electrical Service
	Observation:
	Panel Directory needs to be finalized
CRD Personnel Observation:	

Asset	Component	Location
<b>WTP Fulford</b>	<b>Electrical</b>	<b>203 South Ridge Drive</b>

	Description:	Fan Forced Unit Heater
	Observation:	No issues noted
	CRD Personnel Observation:	No issues noted
	Description:	Booster Pump VFD's
	Observation:	Eaton model MVX no longer supported.
	CRD Personnel Observation:	No issues noted
	Description:	Recycle Pump Starters
	Observation:	No issues noted
	CRD Personnel Observation:	No issues noted

Asset	Component	Location
<b>WTP Fulford</b>	<b>Electrical</b>	<b>203 South Ridge Drive</b>

	Description:
	Storage Tanks
	Observation:  Onsite storage tanks have exposed cabling for level transducers and floats, all subject to vandalism.
CRD Personnel Observation:	
No issues noted	

Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>203 South Ridge Drive</b>

	Description:
	WTP Fulford (background) with PST South Ridge (foreground).
	Observation:  Grounds are well maintained. Fencing is required around the entire site.
CRD Personnel Observation:	
No issues noted	

	Description:
	Side of WTP Fulford
	Observation:  Main access route to building with no stairs for safe access. Trees to the rear of the building require trimming to avoid damage to the roof and adjacent finishes.
CRD Personnel Observation:	
No issues noted	






Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>203 South Ridge Drive</b>

	Description:
	Side of Water Treatment Building
	Observation: Plywood patch at electrical meter requires painting and replacement of failed caulking.
	Description:
	Side of Water Treatment Building
	Observation: Roof requires removal of moss. Upper gutter requires replacement due to damage.
	Description:
	Rear of Water Treatment Building
	Observation: Rainwater from roof has eroded the soils away from the slab on grade.
	CRD Personnel Observation:
	No issues noted

Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>203 South Ridge Drive</b>

	Description:
	Front of Water Treatment Building
	<p>Observation:</p> <p>Replacement of door alarm device and installation of weather stripping and/or door mutes is required to eliminate false alarms in stormy weather.</p>
	Description:
	Inside Water Treatment Building
	<p>Observation:</p> <p>Fire extinguishers, emergency eyewash, and emergency lighting equipment are serviced on a regular basis.</p>
	Description:
	Inside Water Treatment Building
	<p>Observation:</p> <p>Support for a lifting apparatus is required at ceiling level to lift the 80lb lid for the Saturator. Support for a confined space entry apparatus is required over the DAF treatment system to accommodate entry for cleaning and servicing.</p>
CRD Personnel Observation:	
No issues noted	



Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>203 South Ridge Drive</b>



**Description:**

WTP Fulford (background) with  
PST South Ridge (foreground)

**Observation:**

Grounds are well maintained.  
Fencing is required around the  
entire site.

**CRD Personnel Observation:**

No issues noted



**Description:**

Front of Pump Station Building

**Observation:**

No issues noted

**CRD Personnel Observation:**

No issues noted



**Description:**

Side of Pump Station Building

**Observation:**

Roof requires removal of moss.

**CRD Personnel Observation:**



No issues noted



Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>203 South Ridge Drive</b>



	Description:
	Rear of Pump Station Building
	<p>Observation:</p> <p>Roof requires removal of moss. Fencing is required to protect tampering of valves at adjacent tanks.</p> <p>CRD Personnel Observation:</p> <p>No issues noted</p>
	Description:
	Front of Pump Station Building
	<p>Observation:</p> <p>Replacement of door alarm device and installation of weather stripping and/or door mutes is required to eliminate false alarms in stormy weather.</p> <p>CRD Personnel Observation:</p> <p>No issues noted</p>
	Description:
	Interior of Pump Station Building
	<p>Observation:</p> <p>Fire extinguishers, emergency eyewash, and emergency lighting equipment are serviced on a regular basis.</p> <p>CRD Personnel Observation:</p> <p>No issues noted</p>

Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>203 South Ridge Drive</b>


	Description:
	Inside of chlorine room
	Observation: Eyewash station is serviced on a regular basis. There is no hot water to temper the water.
	CRD Personnel Observation:
	No issues noted
	Description:
	Chlorine Room in Pump Station Building
	Observation: Inside of chlorine room. Exhaust fan is functional. There is a chlorine containment spill tank installed.
	CRD Personnel Observation:
	No issues noted



Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>195 South Ridge Drive</b>

	<p>Description:</p> <p>Fulford Water Reservoir</p>
	<p>Observation:</p> <p>View of the 80,000 Imp. gallon (360 m<sup>3</sup>) bolted steel water tank at an elevation of approximately 90 masl.</p>
	<p>Description:</p> <p>Fulford Water Reservoir</p>
	<p>Observation:</p> <p>Side hatch on the wall of the 80,000 Imp. gallon (360 m<sup>3</sup>) bolted steel water tank.</p>
	<p>Description:</p> <p>Fulford Water Reservoir</p>
	<p>Observation:</p> <p>Access to the top of the 80,000 Imp. gallon (360 m<sup>3</sup>) bolted steel water tank.</p>

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>195 South Ridge Drive</b>

	Description:
	Fulford Water Reservoir
	Observation:  Access to the top of the 80,000 Imp. gallon (360 m <sup>3</sup> ) bolted steel water tank.

Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>195 South Ridge Drive</b>


	Description:
	RES Fulford packaged reservoir tank
	Observation:  Grounds are well maintained. Fencing is required around the entire site.
	CRD Personnel Observation:
	No issues noted
	Description:
	Access path from school below.
	Observation:  Grounds are well maintained.
	CRD Personnel Observation:
	No issues noted









Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>195 South Ridge Drive</b>

	Description:
	Farm side of reservoir.
	Observation: Farmers fence beside tank is damaged and not adequate to provide security at tank. Fencing is required around the entire site.
	Description:
	Access to ladder.
	Observation: Security hatch at the bottom of the access ladder requires new lock.
	CRD Personnel Observation:
	No issues noted

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>Reynolds Rd</b>


	Description:
	Raw Water Flow Meter Shed
	Observation: View of the shed housing a raw water meter and strainer assembly. The asset was previously used for chlorination of raw water supply. Currently, it is used for flow metering and leak detection in the raw water supply line.

Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>Reynolds Rd</b>



	Description:
	Raw Water Flow Meter Shed
	Observation:
	Entrance door to the shed. The shed is in poor structural condition.
	Description:
	Raw Water Flow Meter Shed
	Observation:
	Shed interior. Signs of valve corrosion are visible.
	Description:
	Raw Water Flow Meter Shed
	Observation:
	Shed interior. Signs of valve corrosion are visible.



Asset	Component	Location
<b>WTP Fulford</b>	<b>Mechanical</b>	<b>Reynolds Rd</b>



	Description:
	Raw Water Flow Meter Shed
	Observation:  Shed interior. Signs of valve corrosion are visible.

Asset	Component	Location
<b>WTP Fulford</b>	<b>Electrical</b>	<b>Reynolds Rd</b>



	Description:
	Site Main Incoming Electrical Service
	Observation:  Service mounted external to building, exposed to vandalism.  Safety and Electrical code concerns with installation
	CRD Personnel Observation:
	No issues noted
	Description:
	Pole mounted BC Hydro meter
	Observation:  Feeder burial depth not to minimum 450 mm, Safety and Electrical code concerns with installation
	CRD Personnel Observation:
	No issues noted

Asset	Component	Location
<b>WTP Fulford</b>	<b>Structural</b>	<b>Reynolds Rd</b>



  

	Description:
	Strainer Building.
	Observation:
	Roof is leaking and exterior finishes have exceeded life expectancy.
	CRD Personnel Observation:
	No issues noted


	Description:
	Ceiling of Strainer Building.
	Observation:
	Ceiling is rotting with signs of mould. Building should be demolished.
	CRD Personnel Observation:
	No issues noted


	Description:
	Interior of Strainer Building.
	Observation:
	Space heater is being used as baseboard heater is not operational.
	CRD Personnel Observation:
	No issues noted



Asset	Component	Location
<b>PRS Sunnyside</b>	<b>Mechanical</b>	<b>122 Sunnyside Drive</b>




	Description:
	Sunnyside Pump Station
	<p>Observation:</p> <p>Top view of a booster duplex pump station feeding the water treatment plant. Access to the pump station is restricted due to confined space entry.</p>

Asset	Component	Location
<b>PRS Sunnyside</b>	<b>Civil</b>	<b>122 Sunnyside Drive</b>

	Description:
	Railing
	<p>Observation:</p> <p>Protective railing to be installed on the south side of the underground chamber, as there is an approximate 600 mm drop into a ditch on this side of the chamber.</p>
	<p>CRD Personnel Observation:</p> <p>No issues noted</p>


Asset	Component	Location
<b>PRS Sunnyside</b>	<b>Electrical</b>	<b>122 Sunnyside Drive</b>



	Description:
	Site Main Incoming Electrical Service
	Observation: Annual house keeping, vacuum enclosure needs to be preformed along with kiosk maintenance plans.
	Description:
	Booster Pump VFD's
	Observation: Eaton model MVX no longer supported.
	Description:
	Pole mounted BC Hydro meter
	Observation: Tree trimming needs to be performed
	CRD Personnel Observation:
	No issues noted





Asset	Component	Location
<b>PRS Sunnyside</b>	<b>Electrical</b>	<b>122 Sunnyside Drive</b>

	Description:
	Scada and Radio communications
	Observation: Radio antenna needs tree trimming performed
CRD Personnel Observation: No issues noted	


Asset	Component	Location
<b>PRS Sunnyside</b>	<b>Structural</b>	<b>122 Sunnyside Drive</b>

	Description:
	PRS controls enclosure on concrete tank.
	Observation: Guardrail is not high enough to provide adequate fall protection.
CRD Personnel Observation: No issues noted	
	Description:
	Electrical meter on the power pole.
	Observation: Adjacent trees require trimming.
CRD Personnel Observation: No issues noted	

Asset	Component	Location
<b>PRS Sunnyside</b>	<b>Structural</b>	<b>122 Sunnyside Drive</b>

	Description:
	Access hatch to the tank.
	Observation: Some rusting is occurring. Recommend cleaning of rust and painting. CRD Personnel Observation: No issues noted
	Description:
	Ladder to the tank.
	Observation: Access ladder has safety post as per requirements. Access is considered confined space and requires lifting apparatus for personnel. CRD Personnel Observation: No issues noted

Asset	Component	Location
<b>PST Sunnyside</b>	<b>Mechanical</b>	<b>Sunnyside Drive</b>

	Description:
	Sunnyside PRV Station
	Observation: View of the PRV station in dual bypass/main configuration. In-line strainers are not installed in front of PRVs for protection from fine solids.




Asset	Component	Location
<b>PST Sunnyside</b>	<b>Mechanical</b>	<b>Sunnyside Drive</b>


  

	Description:
	Sunnyside PRV Station
	Description:
	Sunnyside PRV Station
	Description:
	Sunnyside PRV Station
	Observation:
	Signs of corrosion are visible on galvanized piping.
	Observation:
	Signs of corrosion are visible.
	Observation:
	Signs of corrosion are visible.

Asset	Component	Location
<b>PST Sunnyside</b>	<b>Mechanical</b>	<b>Sunnyside Drive</b>

	Description:
	Sunnyside PRV Station
	Observation: Signs of corrosion are visible.

Asset	Component	Location
<b>PST Sunnyside</b>	<b>Civil/Health &amp; Safety</b>	<b>Sunnyside Drive</b>


	Description:
	Fire Extinguisher
	Observation: A fire extinguisher should be installed inside the building.
	CRD Personnel Observation: No issues noted



Asset	Component	Location
<b>PST Sunnyside</b>	<b>Structural</b>	<b>Sunnyside Drive</b>

	Description:
	Pumphouse.
	Observation: Moss control is required on the roof.
	Description:
	Rear of pumphouse.
	Observation: Adjacent bushes require trimming.
	Description:
	Access door to pumphouse.
	Observation: Some rusting is occurring. Access door requires painting and replacement of weather stripping.
	CRD Personnel Observation: No issues noted

Asset	Component	Location
<b>PST Sunnyside</b>	<b>Structural</b>	<b>Sunnyside Drive</b>

	Description:
	Ceiling of pumphouse.
	Observation:
	Staining is from a previous leak in the system. Interior plywood finishes require repainting.
	CRD Personnel Observation:
	No issues noted



Asset	Component	Location
Distribution Fulford	Civil	Fulford Area

	Description:
	Standpipe
	Observation:
	In general, all standpipes should have cap on outlet.
	CRD Personnel Observation:
	No issues noted
	Description:
	Eye Wash Station
	Observation:
	No issues noted. Raw water meter building is suggested to be decommissioned, as the building is deemed not safe.
	CRD Personnel Observation:
	No issues noted
	Description:
	Fire hydrant at 122 Sunnyside Drive
	Observation:
	Fire hydrants are in good condition but requires operational maintenance.
	CRD Personnel Observation:
	Fire hydrants have not been maintained.

# APPENDIX E

## FULFORD WATER SYSTEM RECOMMENDED CAPITAL PROJECTS TABLE

**CRD Salt Spring Island Electoral Area**  
**FULFORD WATER SYSTEM RECOMMENDED CAPITAL PROJECTS**

Item No.	Condition Assessment Table Item No.	Asset Name	Evaluation Source	Description of Recommended Capital Project	Relevant Governing Principles	Timeline	Estimated Costs (in 2019 dollars)
1	1	WTP Fulford	Condition Assessment	Repair or replace both flocculator mixer motors	4, 6	Immediate to < 1 year	\$7,000
2	1	WTP Fulford	Condition Assessment	Install turbidity meters on influent line	4, 6	Immediate to < 1 year	\$2,000
3	1	WTP Fulford	Condition Assessment	Investigate feasibility of supply emergency power supply for WTP	2, 4, 6	Immediate to < 1 year	\$5,000
4	1	WTP Fulford	Condition Assessment	Purchase a spare chlorine dosing pump	6	Immediate to < 1 year	\$1,000
5	2	WTP Fulford	Condition Assessment CRD Staff Comments	Clean sediment from bottom of tank. Maintenance Schedule for clearing and inspection water tank required. Improve security fencing around the facility.	1, 2, 4, 6	Immediate to < 1 year	\$8,000
6	5	WTP Fulford	Condition Assessment	Maintenance should be done for path to Reservoir	2, 6	Immediate to < 1 year	\$5,000
7	7	WTP Fulford	Condition Assessment	Inspect Fire Extinguisher and replace if required.	2, 6	Immediate to < 1 year	\$200
8	8	WTP Fulford	Condition Assessment	Inspect Fire Extinguisher and replace if required.	2, 6	Immediate to < 1 year	\$200
9	9	WTP Fulford	Condition Assessment	Relocate Containers	2	Immediate to < 1 year	\$250
10	11	WTP Fulford	Condition Assessment	Replace First Aid Kit	2	Immediate to < 1 year	\$200
11	43	WTP Fulford	Condition Assessment	Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure.	4, 6	Immediate to < 1 year	\$4,000
12	60	WTP Fulford	Condition Assessment	Install new lock on metal hatch at the bottom of the tank's ladder	2	Immediate to < 1 year	\$100
13	63	WTP Fulford	Condition Assessment	Tree and bush trimming required around facility to prevent damage to facility roofing and finishing.	4, 6	Immediate to < 1 year	\$4,000
14	72	WTP Fulford	Condition Assessment	Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure. Replace rear gutters.	4, 6	Immediate to < 1 year	\$10,000
15	82	PRS Sunnyside	Condition Assessment CRD Staff Comments	Replace impellers in pumps.	2, 4, 6	Immediate to < 1 year	\$6,000
16	83	PRS Sunnyside	Condition Assessment	No protective barrier for a ~2 ft drop to the east of the electrical cabinet. A 4 m metal rail should be installed.	2	Immediate to < 1 year	\$3,000
17	84	PRS Sunnyside	Condition Assessment	Recommend purchasing portable CFE tripod and winch to use at this station and others.	2, 4	Immediate to < 1 year	\$5,000
18	85	PRS Sunnyside	Condition Assessment	Tree trimming required around Hydro Incoming pole and BC Hydro meter	6	Immediate to < 1 year	\$2,000
19	86	PRS Sunnyside	Condition Assessment	Provide housekeeping and Preventative Maintenance routine plan	6	Immediate to < 1 year	\$2,500
20	95	PRS Sunnyside	Condition Assessment	Tree trimming is required to allow access to the PCS and to clear the electrical meter located on the adjacent power pole.	6	Immediate to < 1 year	\$2,000
21	104	PRS Sunnyside	Condition Assessment	Install a full height guardrail that still allows for access but prevents a fall hazard when working on the tank.	2	Immediate to < 1 year	Refer to Item No. 83
22	105	PRS Sunnyside	Condition Assessment	Provide securing for a portable tri-pod device.	2, 4	Immediate to < 1 year	Refer to Item No. 84
23	108	PST Sunnyside	Condition Assessment	Inspect Fire Extinguisher and replace if required.	2, 6	Immediate to < 1 year	\$200
24	109	PST Sunnyside	Condition Assessment	Adjacent bushes require trimming to prevent damage to the wall system and finishes. Maintenance required on surrounding vegetation, including branches around overhead telecommunications.	6	Immediate to < 1 year	\$2,000
25	118	PST Sunnyside	Condition Assessment	Removal of moss buildup is required to prevent damage to the roofing materials and supporting structure.	6	Immediate to < 1 year	\$2,500
26	120	PST Sunnyside	Condition Assessment	Installation of a fire extinguisher is required.	2	Immediate to < 1 year	\$500
27	121	Distribution Fulford	Condition Assessment	Trail should have vegetation maintenance for access.	6	Immediate to < 1 year	\$2,000
28	122	Distribution Fulford	Condition Assessment	All standpipes should have cap on outlet.	2, 4	Immediate to < 1 year	\$500
29	123	Distribution Fulford	Condition Assessment CRD Staff Comments	Strainer for water intake requires inspection. Underwater inspection on raw water intake should be done	2, 4, 6	Immediate to < 1 year	\$10,000
30	124	Distribution Fulford	Condition Assessment	Air valves should be replaced	4, 6	Immediate to < 1 year	\$9,000
31	127	Distribution Fulford	CRD Staff Comment	Water service to 341 Reynolds Rd directly from RAW supply main with no treatment. Suggest CRD do further investigation to determine if water is to be treated or not or if the homeowner has a private treatment system.	2, 3, 4, 6	Immediate to < 1 year	\$5,000
32	129	Distribution Fulford	Condition Assessment	Watermain to be replaced with new services (< 1 year). Cost based on \$650 /m	2, 3, 4, 6	Immediate to < 1 year	\$2,900,000
33	135	Distribution Fulford	Condition Assessment	All standpipes should have cap on outlet.	6	Immediate to < 1 year	\$500



**CRD Salt Spring Island Electoral Area**  
**FULFORD WATER SYSTEM RECOMMENDED CAPITAL PROJECTS**

Item No.	Condition Assessment Table Item No.	Asset Name	Evaluation Source	Description of Recommended Capital Project	Relevant Governing Principles	Timeline	Estimated Costs (in 2019 dollars)
34	140	Distribution Fulford	Condition Assessment	Replace severely corroded equipment	2, 4, 6	Immediate to < 1 year	\$5,000
35	1	WTP Fulford	Condition Assessment CRD Staff Comments	Install security fencing around the facility	2, 5, 6	1 - 5 years	\$20,000
36	3	WTP Fulford	Condition Assessment CRD Staff Comments	Replace flow meter facility and provide a secured vault.	2, 4, 5	1 - 5 years	\$20,000
37	12	WTP Fulford	Condition Assessment	Replace panel board directory, or Install larger electrical service	2, 4, 6	1 - 5 years	\$12,000
38	14	WTP Fulford	Condition Assessment	Replace Siemens unit	2, 4, 6	1 - 5 years	\$5,000
39	20	WTP Fulford	Condition Assessment	Replace Panel Board Directory. Address safety concerns regarding resetting motor overloads	2, 4, 6	1 - 5 years	\$5,000
40	25	WTP Fulford	Condition Assessment	Eaton VFD, MVX model no longer supported . Investigate alternatives	2, 4, 6	1 - 5 years	\$5,000
41	27	WTP Fulford	Condition Assessment	Provide a secure vault for float and level transducer wiring	2, 4, 6	1 - 5 years	\$6,000
42	38	WTP Fulford	Condition Assessment CRD Staff Comments	Install perimeter fencing around WTP.	4, 5, 6	1 – 5 years	Refer to Item No. 1
43	42	WTP Fulford	Condition Assessment	Install door mutes and replace roller type alarm system.	2, 4, 6	1 – 5 years	\$3,000
44	47	WTP Fulford	Condition Assessment	There is a requirement for a washroom facility on site.	5	1 – 5 years	\$6,000
45	49	WTP Fulford	Condition Assessment	Install hot water tank to temper water provided for eye wash station.	5	1 – 5 years	\$3,000
46	54	WTP Fulford	Condition Assessment CRD Staff Comments	Install perimeter fencing around water reservoir.	2, 4, 5, 6	1 – 5 years	\$15,000
47	66	WTP Fulford	Condition Assessment	Positive drainage is required at the rear of the pipe entry shed. Consider tying rainwater downspout to the existing perimeter drainage for the main part of the building.	4, 6	1 – 5 years	\$5,000
48	67	WTP Fulford	Condition Assessment CRD Staff Comments	Install perimeter fencing around WTP.	2, 4, 5, 6	1 – 5 years	Refer to Item No. 1
49	68	WTP Fulford	Condition Assessment	Backfill is required at foundation slab	4, 6	1 – 5 years	\$1,000
50	70	WTP Fulford	Condition Assessment	Replace cement siding at electrical mast on facility.	4, 6	1 – 5 years	\$2,000
51	71	WTP Fulford	Condition Assessment	Install door mutes and replace roller type alarm system.	2, 6	1 – 5 years	\$5,000
52	78	WTP Fulford	Condition Assessment	Support for a lifting apparatus is required at ceiling level to lift the 80lb lid for the Saturator. Support for a confined space entry apparatus is required over the DAF treatment system to accommodate entry for cleaning and servicing.	2, 4	1 – 5 years	\$25,000
53	79	WTP Fulford	Condition Assessment	There is a requirement for a washroom facility on site. A mechanical exhaust system is required to extract blue green cyanotoxins produced by blue green algae in the summer months.	2, 4, 5	1 – 5 years	\$6,000
54	81	WTP Fulford	Condition Assessment	Install hot water tank to temper water provided for eye wash station.	2	1 – 5 years	\$3,000
55	90	PRS Sunnyside	Condition Assessment	Eaton VFD, MVX model no longer supported . Investigate alternatives	2, 4, 6	1 – 5 years	\$5,000
56	93	PRS Sunnyside	Condition Assessment	Replace T8 Lamps with LED Lighting.	2, 4, 6	1 – 5 years	\$300
57	107	PST Sunnyside	Condition Assessment	Install in-line strainers in front of PRV.	4, 5	1 – 5 years	\$5,000
58	107	PST Sunnyside	Condition Assessment	Replace piping	4, 6	1 – 5 years	\$7,000
59	113	PST Sunnyside	Condition Assessment	Perimeter fencing is required to secure the pump system.	2, 4, 5, 6	1 – 5 years	\$15,000
60	117	PST Sunnyside	Condition Assessment	Door requires painting and replacement of door sweep and weather stripping to prevent insects from entering the building. Prepare and paint all surfaces to the Master Painter Institute (MPI) Standards.	5, 6	1 – 5 years	\$1,000
61	119	PST Sunnyside	Condition Assessment	Interior requires painting to prevent damage to the plywood finishes in case of a leak in the pumping system. Prepare and paint all surfaces to the Master Painter Institute (MPI) Standards.	5, 6	1 – 5 years	\$3,000
62	126	Distribution Fulford	Condition Assessment CRD Staff Comments	Demolish and replace existing building with underground chamber,	4, 6	1 - 5 years	\$25,000
63	139	Distribution Fulford	Condition Assessment	Replace lighting, heating, and receptacles in building.	2, 4, 6	1 - 5 years	\$1,000
64	128	Distribution Fulford	Condition Assessment	Watermain to be replaced with new services (+ 6 years). Cost based on \$500 /m	2, 3, 4, 6	6 + years	\$61,500
65	145	Distribution Fulford	Condition Assessment	Demolish existing building	2, 4, 6	6 + years	Refer to Item No. 126
66	146	Distribution Fulford	Condition Assessment	Demolish existing building	2, 4, 6	6 + years	Refer to Item No. 126
67	147	Distribution Fulford	Condition Assessment	Demolish existing building	2, 4, 6	6 + years	Refer to Item No. 126
68	149	Distribution Fulford	Condition Assessment	Demolish existing building	2, 4, 6	6 + years	Refer to Item No. 126
69	150	Distribution Fulford	Condition Assessment	Demolish existing building	2, 4, 6	6 + years	Refer to Item No. 126

CRD Salt Spring Island Electoral Area  
FULFORD WATER SYSTEM RECOMMENDED CAPITAL PROJECTS

Item No.	Condition Assessment Table Item No.	Asset Name	Evaluation Source	Description of Recommended Capital Project	Relevant Governing Principles	Timeline	Estimated Costs (in 2019 dollars)
70	1	WTP Fulford	Condition Assessment	There is a requirement for a washroom facility on site	2, 5	6 + years	\$6,000
71	18	WTP Fulford	Condition Assessment	Replace T8 Lamps with LED lighting	2, 4, 6	6 + years	\$3,000
72	29	WTP Fulford	Condition Assessment	Replace T8 Lamps with LED lighting	2, 4, 6	6 + years	\$1,000