

# 2020 Corporate Strategic Asset Management Plan

Appendix E Condition Assessment Framework Part 6 - Sewer Systems



### 800 - Cowichan Bay Sewer

Infrastructure Condition Assessment and Capital Plan 1825 Cowichan Bay Road., Cowichan Bay, BC

#### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$17,692,159	
Number of Users	870	
Replacement Cost Per User	\$20,336	
Annual Replacement Cost (40 Years)	\$289,143	per year
Annual Replacement Cost (80 Years)	\$218,422	per year
10 Year Capital Plan Total	\$125,000	
10 Year Operations and Maintenance Plau	\$165,000	

#### **PROPERTY DESCRIPTION**

The Cowichan Bay Sewer system started construction in 1972 and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	1972	CBS-931401
Cowichan Bay Rd	2000	Record Drawings (237-01-01)
Lift Station (Cowinchan Bay)	2004	Record Drawings (12032400)
Glen Rd/Rondeault Rd/Simon Place	2004	Record Drawings (1431-01)
Simon Place	2004	Record Drawings (1448-01)
Forcemain	2005	Record Drawings (12032400)
Casalinda Place	2005	Record Drawings (010932-20)
Falcon Crescent	2006	Record Drawings (1004-C)
Cowichan Bay Rd	2006	Record Drawings (EV1153-1-03)
Buena Vista Place/Regatta Place	2010	Record Drawings (1600-01-01)
Cowichan Bay Rd	2011	Record Drawings (101-15938-00)
The Cannery	2015	Record Drawings (3093-002)
Vee rd/Mallard way	2015	Record Drawings (1053-C-01)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### **CONTACT INFORMATION**

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**Date Prepared** 



# 800 - Cowichan Bay Sewer

Infrastructure Condition Assessment and Capital Plan 1825 Cowichan Bay Road., Cowichan Bay, BC

Date Prepared

July 18, 2018

#### **REPORT NOTES**

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and	The visual reviews were completed on November 21-24,
	Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 2, 2018	Adam Greenwood and Kieran Bertsch	STEP Systems were identified in the GIS System. We have assumed that these systems are the responsibility of the homeowner and therefore the CVRD is not respondible for the replacement and servicing of these systems.
March 2, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
June 14, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New



Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

### Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 (64))	3						
	4						
Important (1 - 2 Year)	5						\$0
(1-2 (ear)	6						
Short Term	7	2	S-LS-COM-6	Capital Renewal	Locate VFDs and control panels in lift station housing to reduce condensation.	\$5,000	¢25.000
(2 - 5 Year)	8	3	S-LS-GEN-11	Capital Renewal	Install generator to code at Buena Vista PI lift station.	\$20,000	\$25,000
	9						
	10	2	S-LS-GEN-7	Capital Upgrade/New	Replace generator at lift station.	\$100,000	
Medium Term (5 - 10 Year)	11						\$100,000
(5 - 10 fear)	12						
						Total	\$125,000

### Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0 - i rear)	3						
Important	4						
(1 - 2 Year)	5						\$0
(1 1 1 0 0 1 )	6						
	7	1	S-LS-BLD-1	Maintenance	Outfall of Lagoons may be upgraded by JUB. Confirm portion of cost to be contributed to outfall improvements and any other future lagoon upgrades/improvements.	\$10,000	
Short Term	8	2	S-LS-BLD-2	Maintenance	Issues with I&I have resulted in LS backups and trucking sewage. Continue I&I investigation and repairs.	\$40,000	
(2 - 5 Year)		4, 20, 23, 30 and 42	ALL	Operations	Inspect/flush forcemain to confirm there are no operational issues.	\$40,000	\$105,000
	10	48	S-STP-DF-103	Operations	Review condition of disposal field.	\$15,000	
	11						
	12						
Medium Term	13	17 to 48	ALL	Operations	Inspect/assess collection system and manholes for deterioration and I&I issues to determine replacement timing/phasing. This will include visual inspections, and/or reviewing historical maintenance and repair frequencies.	\$60,000	¢c0.000
(5 - 10 Year)	14						\$60,000
	15						
	16						
	17						
						Total	\$165,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Cowichan ValleyOwner:Regional District (CVRD)System:800Cowichan Bay Sewer		Infrastructure Condition Assessment			
Civic Address:1825 Cowichan Bay rd.Geographic Location:Cowichan BayCustomers:Parcels:755Users:870			Total Replacement Value\$17,692,159Value per user\$20,336		
Asset ID Location Function Code Address	Location       DWG Ref       Major       Minor       Spec       ID       Asset Code	Photo     Description     Make     Model     Material     Quantity	Asset Inventory          y       Quantity Unit       Year Installed       Year Renewed       Service Life Expectancy       Est. Remaining Service Life       Unit Price       Replacement Value of A	sset Physical Condition Maximum Functional Condition Demand Condition Probablity of Failure Severity of	Recommendations / Action Items       10 Year Capital Plan         Failure       Condition       Description       Type of Work       Budget Estimate       Timing       Comment/Question to be resolved         Outfall of Lagoons may be upgraded by       Example       Example       Example       Example       Example
1 800 1825 Cowichan Bay rd.	Lagoons operated by the Joint Utility Board (JUB).       GIS       S       LS       BLD       1       S-LS-BLD-1	9 to 17       Lagoon is operated by the JUB. Users of Cowichan Bay Sewer contribute 7% to Environmental Liability fund. No information was available for the existing lagoons during this assessment.       1	ea 1972 60 14 \$2,000,000 \$2,000,000	Good     Potential Outfall Upgrade     2     3	Outlant of Lagoons may be upgraded by JUB. Confirm portion of cost to be contributed to outfall improvements and any other future lagoon upgrades/improvements.Maintenance\$10,0002-5 YearNo Information was available about the lagoons as part of this assessment. Further review of potential cost implications related to using lagoon system is required.
2 800 1825 Cowichan Bay rd.		9 to 17 Lift station 1	ea         2004         40         26         \$750,000         \$750,000	Good     Meets standard     Able to meet capacity, major I&I     2     3	3       Issues with I&I have resulted in LS backups and trucking sewage. Continue I&I investigation and repairs.       Maintenance       \$40,000       2-5 Year
2         800         1825 Cowichan Bay rd.	Lift station       12032400       S       LS       PP       4       S-LS-PP-4         Lift station       12032400       S       LS       VC       5       S-LS-VC-5	10, 15Pump (3 25 HP Flygt pumps)Flygt311, 12Process piping c/w valves, tees, pipes, chamber1111, 12Valve chamber1114 to 17Communications kiosk11	ea         2004         2012         20         6         \$25,000         \$75,000           ea         2004         40         26         \$50,000         \$50,000           LS         2004         30         16         \$200,000         \$200,000           ea         2004         10         0         \$40,000         \$40,000	Good       Meets standard       Able to meet capacity       1       1         Good       Meets standard       Image: Comparison of the standard       Image: Compa	599910+ Year599910+ Year599910+ Year69910+ Year10+ Year39999399999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999999
2   800   1825 Cowichan Bay rd.	Lift stationImage: Constraint of the station <thi< td=""><td>13, 17     Backup generator</td><td></td><td>Good - although all directions are in Chinese       Does not meet standard       1       3         Image: Chinese       Image: Chinese       Image: Chinese       Image: Chinese       Image: Chinese</td><td>And ensation.     Condensation.       4     Replace generator at lift station.     Capital Upgrade/New     \$100,000     5-10 Year       5     5     5     5     5</td></thi<>	13, 17     Backup generator		Good - although all directions are in Chinese       Does not meet standard       1       3         Image: Chinese       Image: Chinese       Image: Chinese       Image: Chinese       Image: Chinese	And ensation.     Condensation.       4     Replace generator at lift station.     Capital Upgrade/New     \$100,000     5-10 Year       5     5     5     5     5
3         800         1825 Cowichan Bay rd.	Buena Vista Pl/Regatta Pl1600-01-01SLSPMP9S-LS-PMP-9Buena Vista Pl/Regatta Pl1600-01-01SLSCOM10S-LS-COM-10Buena Vista Pl/Regatta Pl1600-01-01SLSGEN11S-LS-GEN-11	5,6     Submersible pump, 2hp solids handling     Myers     3VX20M-4-53-35     2       2,4     Control kiosk     1       8     Genset, 8kW     1	ea         2010         10         2         \$20,000         \$20,000           ea         2010         40         32         \$20,000         \$20,000	GoodMeets standardAble to meet capacity11GoodMeets standardAble to meet capacity11GoodMeets standardImage: Comparison of the standard11FairDoes not meet standardNot installed to code32	5       5       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       1
3         800         1825 Cowichan Bay rd.           4         800         1825 Cowichan Bay rd.           4         800         1825 Cowichan Bay rd.           4         800         1825 Cowichan Bay rd.	Buena Vista Pl/Regatta Pl       1600-01-01       S       LS       PP       12       S-LS-PP-12         Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0-050 - 0+315, 1+003 - 5+840       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Bay rd / Christopher rd/Trans Canada Highway. 0+315 - 1+003       Image: Complex Ba	6       Process piping c/w valves, pipes       1         Image: Constraint of the system of the	LS       2010       40       32       \$10,000       \$10,000         m       2005       80       67       \$600       \$3,121,200         m       2002       80       64       \$600       \$412,800	Good       Meets standard       1       1         Image: Construction of the standard       Image: Constandard       Image: Construction of the standard	5     6     10+ Year       6     6     10+ Year       6     6     6       8     10spect/flush forcemain to confirm there are no operational issues.     Operations     \$40,000     2-5 Year       8     10spect/flush forcemain to confirm there are no operational issues.     Operations     Included above     2-5 Year
4         800         1825 Cowichan Bay rd.	Cowichan Bay rd / Christopher rd/Trans Canada Highway. 0-050 - 0+315, 1+003 - 5+840       S       FM       FM       CO       15       S-FM-CO-15         Cowichan Bay rd / Christopher rd/Trans Canada Highway. 0-050 - 0+315, 1+003 - 5+840       S       FM       CO       15       S-FM-CO-15	Pig loading/retrieval assembly c/w chamber, valves, pipes       Class 150       Closs 150       Pvc       088         Air valve assembly c/w chamber, valves, pipes       Air valve assembly c/w chamber, valves, pipes       3	Image: Solution         2002         Solution         64         5000         5412,800         5412,800         5412,800         5412,800         5412,800         5412,800         5412,800         5412,800         540,000         5320,000         5320,000         5320,000         5320,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         5120,000         512	Recently itustied/cleaned23Image: Constrained of the state of the stat	Image: state       Image: state <th< td=""></th<>
48001825 Cowichan Bay rd.48001825 Cowichan Bay rd.	Cowichan Bay rd / Christopher rd/Trans Canada Highway. 0-050 - 0+315, 1+003 - 5+840       12032400       S       FM       CO       17       S-FM-CO-17         Cowichan Bay rd / Christopher rd/Trans Canada Highway. 0-050 - 0+315, 1+003 - 5+840       12032400       S       FM       CO       18       S-FM-CO-18	Flushout assembly c/w chamber, valves, pipes       4         Flushout assembly c/w chamber, valves, pipes       1         Step system, 50mm (Assumed to be the responsibility of Property       Series 160       DVC       1 260	LS         2005         30         17         \$40,000         \$160,000           LS         2002         30         14         \$40,000         \$40,000	Image: Constraint of the system         2         3           Image: Constraint of the system         Image: Constraint of the system         3	3       Inspect/flush forcemain to confirm there are no operational issues.       Operations       Included above       2-5 Year         3       Inspect/flush forcemain to confirm there are no operational issues.       Operations       Included above       2-5 Year
5         800         1825 Cowichan Bay rd.           5         800         1825 Cowichan Bay rd.	Trans Canada Highway, 3+740 - 4+855, Hillbank rd. 10+015-10+160       12032400       S       FM       PP       19       S-FM-PP-19         Image: Imag	Owner)     Series 160     PVC     1,260       Image: SMH1, asphalt roadway     Image: SMH2, asphalt roadway     Image: SMH2, asphalt roadway     Image: SMH2, asphalt roadway	ea         2004         40         26         \$8,000         \$8,000           ea         2004         40         26         \$8,000         \$8,000	n/an/a11111111	n/an/aImage: Image: ImageImage: Image:
5         800         1825 Cowichan Bay rd.           6         800         1825 Cowichan Bay rd.	Buena Vista Pl         1600-01-01         S         SS         MH         24         S-SS-MH-24	300mm Sewer main, asphalt roadwaySDR35PVC24 </td <td></td> <td>Image: state in the state in</td> <td>510+ YearC22522522522522522525252525252525</td>		Image: state in the state in	510+ YearC22522522522522522525252525252525
7         800         1825 Cowichan Bay rd.           7         800         1825 Cowichan Bay rd.           7         800         1825 Cowichan Bay rd.           8         800         1825 Cowichan Bay rd.	Casalinda place         SS         S         26         SSS-S-26           Casalinda place         010932-20         S         SS         S         27         SSS-S-27	SMH A. 1.5m depth 1	ea         2005         40         27         \$8,000         \$8,000           m         2005         80         67         \$550         \$35,200	Image: Second	Image: selection of the
	Cowichan Bay rd         237-01-01         S         SS         CO         29         S-SS-CO-29           Cowichan Bay rd         237-01-01         S         SS         S         30         S-SS-S30           Cowichan Bay rd         237-01-01         S         SS         SV         31         S-SS-SV-31           Cowichan Bay rd         101-15938-00         S         SS         MH         32         S-SS-MH-32	Sewer cleanouts, SCO, 2.7m depth     1       Sewermain pipe, 200mm     SDR35     PVC     1,350       Service connections     Service connections     2	ea         2000         40         22         \$2,000         \$2,000           m         2000         80         62         \$550         \$742,478           ea         2000         40         22         \$2,000         \$4,000           ea         2011         40         33         \$8,000         \$8,000           ea         2006         40         28         \$8,000         \$8,000	Image: Constraint of the system       1       2	510+ Year5C10+ Year5C10+ Year5C10+ Year5C10+ Year5C10+ Year
9         800         1825 Cowichan Bay rd.	Falcon Crescent         1004-C         S         SS         MH         34         S-SS-MH-34           Falcon Crescent         1004-C         S         SS         CO         35         S-SS-CO-35           Falcon Crescent         1004-C         S         SS         S         S         S         S-SS-CO-35	Image: Sewer manholes, SMH 0-11, 1.5-3.5m depthsImage: Sewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthSewer main pipe, 200mmSewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthSewer main pipe, 200mmSewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depthImage: Sewer cleanouts, SCO 0, 2.1m depth	ea         2006         40         28         \$8,000         \$96,000           ea         2006         40         28         \$2,000         \$96,000           ea         2006         40         28         \$2,000         \$2,000           m         2006         80         68         \$550         \$555,500	Image: state of the state of	SolutionSolutionSolutionMarkMarkMarkSolutionMarkMarkSolutionMarkMarkSolutionMarkMarkSolutionMarkMarkSolutionMarkMarkSolutionMarkSolutionMarkSolutionMarkSolutionMarkSolutionMarkSolutionMarkSolutionMarkSolutionMarkSolutionMark
9         800         1825 Cowichan Bay rd.           10         800         1825 Cowichan Bay rd.           10         800         1825 Cowichan Bay rd.           10         800         1825 Cowichan Bay rd.	Glen rd.         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S         S<	Image: Sewermain pipe, 200mm     SDR35     PVC     175       Sewer manole, SMH A, B, Asphalt boulevard, 1.5-3m depths     Image: Solution of the second	ea         2004         40         26         \$8,000         \$16,000	Image: state in the state in	510+ YearC22522522522522626272727272727272727272727272727272727272727272727777777777777777777777777777777777777777777777777777777777
11         800         1825 Cowichan Bay rd.           12         800         1825 Cowichan Bay rd.	Mallard way         1053-C-01         S         SS         MH         41         S-SS-MH-41           Mallard way         1053-C-01         S         SS         SV         42         S-SS-SV-42           Mallard way         Image: Constraint of the second se	Sprain pipe, 200mm Sprain pipe,	ea         2015         40         37         \$8,000         \$16,000           ea         2015         40         37         \$3,000         \$39,000           ea         2015         40         37         \$3,000         \$39,000           m         2010         80         72         \$550         \$104,733	Image: Constraint of the system       1       2	510+ Year5Control10+ Year5Control10+ Year65Control5Control10+ Year10+ Year10+ Year
12         800         1825 Cowichan Bay rd.           12         800         1825 Cowichan Bay rd.           13         800         1825 Cowichan Bay rd.           13         800         1825 Cowichan Bay rd.           13         800         1825 Cowichan Bay rd.	Regatta Pl         1600-01-01         S         SS         MH         44         S-SS-MH-44           Regatta Pl         1600-01-01         S         SS         SV         45         S-SS-SV-45           Image: Simon Place         1431-01         S         SS         S         46         S-SS-SV-46	Sewer manholes, SMH G,H, 2-2.5m depths       2         Service connections       10         Service connections       10         Sewer main pipe, 200mm       SDR35       PVC	ea         2010         40         32         \$8,000         \$16,000           ea         2010         40         32         \$3,000         \$30,000           m         2004         80         66         \$550         \$58,245	Image: Constraint of the system       1       2	510+ Year5Constant10+ Year6610+ Year5610+ Year5610+ Year
13         800         1825 Cowichan Bay rd.           13         800         1825 Cowichan Bay rd.	Simon Place         1431-01         S         SS         MH         48         S-SS-MH-48           Simon Place         1431-01         S         SS         CO         49         S-SS-CO-49           Simon Place         1431-01         S         SS         SV         50         S-SS-SV-50	Sewer cleanouts, SCO H       1         Service connections       11         Sewer manhole, SMH F, 1.3m depth       1	m20048066\$500\$48,150ea20044026\$8,000\$24,000ea20044026\$2,000\$2,000ea20044026\$3,000\$33,000ea20044026\$8,000\$3,000ea20044026\$8,000\$4,000ea20044026\$2,000\$4,000	Image: state of the state	Solution5Image: Solution<
13         800         1825 Cowichan Bay rd.           13         800         1825 Cowichan Bay rd.	Simon Place         1448-01         S         SS         MH         53         S-SS-MH-53           Simon Place         1448-01         S         SS         MH         54         S-SS-MH-54           Simon Place         1448-01         S         SS         S         S         SS	Sewer cleanouts, SCO E, G, 1.1-2m depths2Sewer main pipe, 150mmSDR35PVC98Sewer main pipe, 200mmSDR35PVC122Service connectionsService connections17	m         2004         80         66         \$500         \$48,750           m         2004         80         66         \$550         \$67,045           ea         2004         40         26         \$3,000         \$51,000	Image: Constraint of the second sec	SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
14         800         1825 Cowichan Bay rd.           14         800         1825 Cowichan Bay rd.	Rondeault rd.       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       S       <	ISERVICE CONDECTIONS	ea 2004 40 26 \$8,000 \$24,000	Image: Constraint of the second sec	510+ Year5610+ Year5610+ Year5610+ Year5610+ Year6610+ Year6666676767677777777777777777777777777777777777777777777777777777777777777777777777777777777777777777777777 </td
15         800         1825 Cowichan Bay rd.           15         800         1825 Cowichan Bay rd.           16         800         1825 Cowichan Bay rd.           16         800         1825 Cowichan Bay rd.           16         800         1825 Cowichan Bay rd.	The Cannery       3093-002       S       S       61       S-SS-S-61         Image: Constraint of the constra	SSMH 1, 1050mmI1Sewermain pipe, 150mmDR35PVC14Image: Sewer clean outs, SCO 8, 11, 1.5-3.2m depthsImage: Sewer clean out	ea         2015         40         37         \$2,000         \$4,000           m         2015         80         77         \$550         \$247,830	Image: state s	510+ Year5ConstantConstant5ConstantConstant5ConstantConstant5ConstantConstant5ConstantConstant5ConstantConstant6ConstantConstant6ConstantConstant6ConstantConstant6ConstantConstant6ConstantConstant6ConstantConstant7ConstantConstant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7Constant7 <th< td=""></th<>
16         800         1825 Cowichan Bay rd.           16         800         1825 Cowichan Bay rd.           16         800         1825 Cowichan Bay rd.           17         800         1825 Cowichan Bay rd.	Vee rd         1053-C-01         S         SS         MH         28         S-SS-MH-28           Vee rd         1053-C-01         S         SS         SV         65         S-SS-SV-65           ALDER GLEN ROAD         GIS (CBS-9314-01)         S         SS         S         66         S-SS-S-66	Sewer manholes, SMH 1-7, 9, 10, 14, 1.5-3.2m depths       10         Service connections       16         Service connections       16         Sever main, 200mm       10	ea         2015         40         37         \$8,000         \$80,000           ea         2015         40         37         \$3,000         \$48,000           Image: Market M	Image: Constraint of the system of the sy	5       10+ Year         5       10+ Year         6       10+ Year         6       10+ Year         6       10+ Year         7       10+ Year         8       10+ Year         9       10+ Year         9       10+ Year         10+ Year       10+ Year         10+ Year       10+ Year         10+ Year       10+ Year
18         800         1825 Cowichan Bay rd.           19         800         1825 Cowichan Bay rd.	BOTWOOD LANE         GIS (CBS-9314-01)         S         S         68         S-SS-S-68	Sewermain, 200mm         58	m       1972       80       34       \$550       \$187,625         m       1972       0       0       0       0       0       0         m       1972       80       34       \$550       \$187,625         m       1972       80       34       \$550       \$31,866         m       1972       0       0       0       0	Image: state of the state o	4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         6       4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         6       6       6       6       6       6       6         6       6       6       6       6       6
20         800         1825 Cowichan Bay rd.           20         800         1825 Cowichan Bay rd.           20         800         1825 Cowichan Bay rd.           21         800         1825 Cowichan Bay rd.	BUENA VISTA PLACE       GIS (CBS-9314-01)       S       SS       S       70       S-SS-S-70         CASALINDA PLACE       GIS (CBS-9314-01)       S       SS       S       71       S-SS-S-71	Sewermain, 200mm (GIS minus catalogued length from 010932-20)     0	m         1972         80         34         \$550         \$22,007		3       forcemain to confirm there are no opera       Operations       Included in \$40,000       2-5 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         5       1       1       1       1       1       1
22         800         1825 Cowichan Bay rd.           23         800         1825 Cowichan Bay rd.		Sewermain, 200mm55Image: Sewermain, 200mm (GIS minus catalogued length from 237-01-01)Image: Sewermain, 200mm (GIS minus catalogued length from 237-01-01)Image: Sewermain, 250mmSewermain, 250mmImage: Sewermain, 250mmSewermain, 250mmImage: Sewermain, 300mm (includes 1615m of unknown material) (GIS minus catalogued length from 12032400)PVCImage: Sewermain, 250mmImage: Sewermain, 250mm	m         1972         80         34         \$550         \$628,162           m         1972         80         34         \$600         \$381,081	Image: Constraint of the system         Image: Constand of the system         Image: Constando	4he replacement timing/phasing. This will iOperationsIncluded above5-10 Year41e replacement timing/phasing. This will iOperationsIncluded above5-10 Year41e replacement timing/phasing. This will iOperationsIncluded above5-10 Year41e replacement timing/phasing. This will iOperationsIncluded above5-10 Year3111113111114111114111115311114311114411114411115511114511115111114111115111114111115111115111115111115111115111115111115111115111
23       800       1825 Cowichan Bay rd.         24       800       1825 Cowichan Bay rd.         25       800       1825 Cowichan Bay rd.	COWICHAN BAY ROAD       GIS (CBS-9314-01)       S       SS       S       76       S-SS-S-76         Image: Comparison of the system of the syst	Sewermain, 300mm (GIS minus catalogued length from 12032400)       5         Sewermain, 200mm       126	m       1972       80       34       \$600       \$2,862         m       1972       80       34       \$550       \$69,376         m       1972       80       34       \$550       \$69,376         m       1972       80       34       \$550       \$69,376	Image: Constraint of the system         Constraint of the system <thc< td=""><td>4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         Image: Construction of the second second</td></thc<>	4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         Image: Construction of the second
26         800         1825 Cowichan Bay rd.           26         800         1825 Cowichan Bay rd.           27         800         1825 Cowichan Bay rd.	Image: Second system         Image: Se	Sewermain, 200mm         Severmain         387	m         1972         80         34         \$550         \$213,056           m         1972         80         34         \$550         \$213,056           m         1972         80         34         \$550         \$213,056	Image: constraint of the second sec	A       Recent timing/phasing. This will i       Operations       Included above       5-10 Year         A       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         A       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         A       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year
28       800       1825 Cowichan Bay rd.         29       800       1825 Cowichan Bay rd.         20       800       1825 Cowichan Bay rd.	GILLIS ROADGIS (CBS-9314-01)SSS81S-SS-S-81GIN COLORGIS (CBS-9314-01)SSSSSSSSGILLIS ROADGIS (CBS-9314-01)SSSSSSSSS	Image: Constraint of the second se		Image: Constraint of the second se	A       he replacement timing/phasing. This will       Operations       Included above       5-10 Year         A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A       A
30         800         1825 Cowichan Bay rd.           31         800         1825 Cowichan Bay rd.           32         800         1825 Cowichan Bay rd.	KENNEDY LANE         GIS (CBS-9314-01)         S         S         S         84         S-SS-S-84           Image: Comparison of the system of the syst	Forcemain, 300mm147Sewermain, 200mmSewermain, 200mmSewermain, 200mmSewermain, 200mmSewermain, 200mmSewermain, 200mm	m         1972         80         34         \$600         \$88,200           Imm         Imm <td></td> <td>3forcemain to confirm there are no operationsIncluded in \$40,0002-5 Year1Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate ar</td>		3forcemain to confirm there are no operationsIncluded in \$40,0002-5 Year1Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate are no operationsImage: A strate are no operationsImage: A strate are no operations4Image: A strate ar
33       800       1825 Cowichan Bay rd.         34       800       1825 Cowichan Bay rd.	Image: style s	Image: Constraint of the second se	m         1972         80         34         \$550         \$151,988           m         1972         80         34         \$550         \$151,988           m         1972         80         34         \$550         \$151,988           m         1972         80         34         \$550         \$67,473	Image: Constraint of the system of the sy	
35         800         1825 Cowichan Bay rd.           36         800         1825 Cowichan Bay rd.           37         800         1825 Cowichan Bay rd.	PAVENHAM ROAD         GIS (CBS-9314-01)         S         S         S         89         S-SS-S-89	Sewermain, 200mm         304		Image: state of the state of	4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year
37       800       1825 Cowichan Bay rd.         38       800       1825 Cowichan Bay rd.         39       800       1825 Cowichan Bay rd.	RAPTOR PLACE       GIS (CBS-9314-01)       S       SS       S       91       S-SS-S-91         Image: Comparison of the system of	Sewermain, 200mm     962       Sewermain, 200mm     1       Sewermain, 200mm     51       Sewermain, 200mm (GIS minus catalogued length from 1600-01-01)     20	m 1972 80 34 \$550 \$28.109		4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       he replacement timing/phasing. This will i       Operations       Included above       5-10 Year
40         800         1825 Cowichan Bay rd.           41         800         1825 Cowichan Bay rd.	RONDEAULT ROAD       GIS (CBS-9314-01)       S       S       S       93       S-SS-S-93         Image: Simon place       GIS (CBS-9314-01)       S       S       S       94       S-SS-S-94         Image: Simon place	Image: Sewermain, 200mm (GIS minus catalogued length from 1431-01)       Image: Sewermain, 200mm (GIS minus catalogued length from 1431-01 and 1448-01)       Image: Sewermain, 200mm (GIS minus catalogued length from 1431-01 and 1448-01)	m 1072 80 24 \$550 \$20.010	Image: select	Image: A state of the constraint of
42       800       1825 Cowichan Bay rd.         43       800       1825 Cowichan Bay rd.         44       800       1825 Cowichan Bay rd.	Image: Mark and the second s	Sewermain, 200mm (GIS minus catalogued length from 1053-C-01)     0	m       1972       80       34       \$600       \$0         m       1972       m       1972       100       100       100       100         m       1972       80       34       \$550       \$220         m       1972       80       34       \$550       \$210         m       1972       80       34       \$550       \$41,910	Image: Constraint of the system of the sy	3       forcemain to confirm there are no operations       Included in \$40,000       2-5 Year         4       a replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       b replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       b replacement timing/phasing. This will i       Operations       Included above       5-10 Year         4       b replacement timing/phasing. This will i       Operations       Included above       5-10 Year
44         800         1825 Cowichan Bay rd.           45         800         1825 Cowichan Bay rd.           46         800         1825 Cowichan Bay rd.	WESSEX ROAD         GIS (CBS-9314-01)         S         S         98         S-SS-S-98	Sewermain, 150mm         514	m 1972 80 34 \$500 \$256,886	Image: state of the state	
47         800         1825 Cowichan Bay rd.           47         800         1825 Cowichan Bay rd.           48         800         1825 Cowichan Bay rd.           48         800         1825 Cowichan Bay rd.		Image: Constraint of the second se	Image: Marking	Image: select	Image: A state of the constraint of
48         800         1825 Cowichan Bay rd.	e available for the original system, however, GIS quantities were used to calculate tr GIS (CBS-9314-01) S STP DF 103 S-STP-DF-103	Disposal field     1	ea         1972         40         0         \$250,000         \$250,000		3       he replacement timing/phasing. This will i       Operations       Included above       2-5 Year         3       Review condition of disposal field.       Operations       \$15,000       2-5 Year       rmation is available about disposal field. Further review is required to identify future costs associated with the disposal field.

- - - 8 LIFT STATION FIELD INSPECTION MORRISON HERSHFIELD Server Divictor Ba SYSTEM: DATE: SYSTEM CODE: PROJECT No.: 5170700 INSPECTED BY: CVRD STAFF PRESENT: 1) Site Conditions 2) Building Conditions 3) Condition of wet well: Visible Deterioration of structure and hatch:

800 (1)



800 Cowichan Bay Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's



800 (3)



**800 (4)** 2 of 9

800 (5)



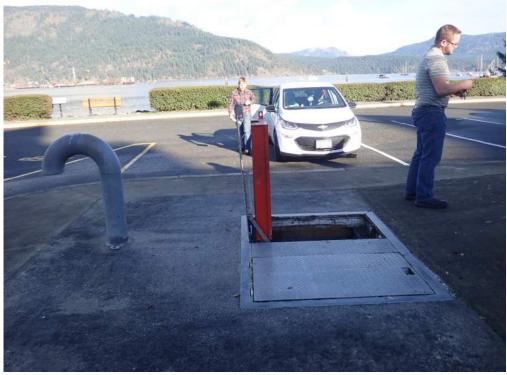
**800 (6)** 3 of 9



800 (7)



**800 (8)** 4 of 9



800 (9)





800 (11)





800 (13)



**800 (14)** 7 of 9



800 (15)



800 Cowichan Bay Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

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800 (17)

### 801 - Brulette Place Sewer

Infrastructure Condition Assessment and Capital Plan Brulette Place, Mill Bay, BC

#### **PROPERTY STATISTICS AND REPORT SUMMARY**

System Replacement Cost Estimate	\$2,853,530	
Number of Users	56	
Replacement Cost Per User	\$50,956	
Annual Replacement Cost (40 Years)	\$45,927	per year
Annual Replacement Cost (80 Years)	\$35,229	per year
10 Year Capital Plan Total	\$290,000	
10 Year Operations and Maintenance Plan Total	\$26,000	

#### **PROPERTY DESCRIPTION**

The Brulette Place Sewer system was originally constructed by a developer with multiple household scale treatment systems connected together for treatment. The CVRD has purchased a membrane treatment system (TORAY) and will be retrofitting the treatment system in the near future. THe date of the original system install was not available at the time of this assessment.

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Development	Year Installed	Source
Treatment System - Multiple household scale	n/a	
treatment systems	(assumed 2000)	CVRD Input
Treatment System - RBC and RIB for 19 units	n/a (assumed 2000)	CVRD Input
Brulette Place Collection	2003	Record Drawing (151-01)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### **CONTACT INFORMATION**

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com

**Date Prepared** 



# 801 - Brulette Place Sewer

Infrastructure Condition Assessment and Capital Plan Brulette Place, Mill Bay, BC

#### **REPORT NOTES**

Date Prepared

July 18, 2018

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 2, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
June 29, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	<ul> <li>Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks:</li> <li>1) Reorganize linear assets based on street names</li> <li>2) Complete building asset management seperately (to be completed by Chris Raudoy)</li> <li>3) Include disclaimer on cost estimates</li> <li>4) Create seperate tables for O&amp;M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New</li> </ul>

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Date Prepared July 18, 2018

# **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

# Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1	1	S-STP-STP-1	Capital Renewal	Install Toray System and modify existing system.	\$250,000	
Critical (0 - 1 Year)	2						\$250,000
	3						
luce estant	4						
Important (1 - 2 Year)	5						\$0
(1 - 2 Tear)	6						
Short Term	7	1	S-STP-GEN-5	Capital Renewal	Replace generator for STP (scheduled).	\$40,000	\$40,000
(2 - 5 Year)	8						
(2 - 5 (61)	9						
Medium Term (5 - 10 Year)	10						
	11						\$0
	12						
						Total	\$290,000

# Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total	
	1							
Critical (0 - 1 Year)	2						\$0	
(0-11ear)	3						+-	
	4							
Important (1 - 2 Year)	5						\$0	
(1-2 fear)	6							
	7	1	S-STP-UV-6	Operations	Inspect/assess UV filter in STP to ensure it is performing well.	\$2,000		
	8	2	S-STP-STP-8 and S-STP-PP-9	Operations	Review condition of RBC treatment system for deterioration to determine replacement timing/phasing.	\$5,000	\$16,000	
Short Term (2 - 5 Year)	9	3	S-STP-STP-10	Operations	Review condition of RIB treatment system for deterioration to determine replacement timing/phasing.	\$5,000		
	10	4	ALL	Operations	Inspect/assess lift station and pumps to ensure they are performing well.	\$2,000		
	11	5	ALL	Operations	Inspect/assess lift station and pumps to ensure they are performing well.	\$2,000		
	12							
Medium Term (5 - 10 Year)	13	1	S-STP-PP-2	Operations	Inspect/assess process piping in STP for deterioration to determine replacement timing/phasing. This may include pressure testing, visual inspections (exposing), and/or reviewing historical maintenance and repair frequencies.	\$5,000		
	14	1	S-STP-COM-4	Operations	Assess communication system to ensure it meets the system needs.	\$5,000	\$10,000	
	15							
	16							
	17							
						Total	\$26,000	

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:	Cowichan Valley Re	Cowichan Valley Regional District (CVRD)				
System:	801 Brulette Place Sewer					
Civic Address:	Brulette Place					
Geographic Location:	East of Mill Bay	East of Mill Bay				
Customers:	Parcels:	58				
	Users:	56				

Owner:	Cowichan Valley Regional District (CVRD)	I		I	Infrastructure Condition Assessment											
System:	01 Brulette Place Sewer			I												
Civic Address:	Brulette Place															
Civic Address: B Geographic Location: E	ast of Mill Bay															
Customers: F	varcels: 58								Total Replacement Value Value per user	\$2,853,530						
լւ	Jsers: 56						Current Year	2018	Value per user	\$50,956						
Asset ID				Asset Code		Asset Inventory						Condition Assessment		Recommendations / Action Items 10	Year Capital Plan	
1	Function Code Address		DWG Ref Major Minor Spe	ec ID Asset Code	PhotoDescription6 to 10, 16 to 20Sewage treatment plant, Toray system c/w tanks17, 18, 22, 23Process piping c/w valves, pipes	Make         Model         Material         Quantity         Quantity Unit         Year Installed         Year Renewed           1         1         1         2018         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	Service Life Expectancy	Est. Remaining Service Life	e Unit Price F \$1,000,000	\$1,000,000		Demand Condition	Probablity of Failure Severity of Failure	ConditionDescriptionType of WorkE1Install Toray System and modify existing system.Capital Renewal	Sudget Estimate Timing	Comment/Question to be resolved
1	801 Brulette Place	Sewage treatment plant	Site Visit / Photos S STP STP		6 to 10, 16 to 20 Sewage treatment plant, Toray system C/w tanks	1 LS 2018 1 LS 2000	40	40	\$1,000,000	\$1,000,000	Fair Does not meet standard			1Install Toray System and modify existing system.Capital Renewal4Inspect/assess process piping in STP for deterioration to deterrOperations	\$250,000 0-1 Year \$5,000 5-10 Year	
		Sewage treatment plant		P 2 5-51P-PP-2	17, 18, 22, 25 Process piping c/w valves, pipes		40	22	\$30,000	\$50,000				4 Inspect/assess process piping in STP for detenoration to deten Operations	\$5,000 <u>5-10 fear</u>	
									Refer to Brulette Place Sewer						er to Brulette	
1	801 Brulette Place	Sewage treatment plant	Site Visit / Photos S STP COM	M 3 S-STP-COM-3	21 to 25 Communications kiosk building (STP and LS)	1 ea 2000	10	0	System Building Condition					Pla	ce Sewer System	
_								·	Assessment.						ding Condition	
														Ass	essment.	
1	801 Brulette Place	Sewage treatment plant	Site Visit / Photos     S     STP     CON       Site Visit / Photos     S     STP     GEN       Site Visit / Photos     S     STP     UV	M 4 S-STP-COM-4	21 to 25     Communications (STP and LS)       26     Generator (STP)       22, 23     UV filter unit	1 ea 2000	10	0	\$9,000	\$9,000	Good Meets standard		2 2	4 Assess communication system to ensure it meets the system n Operations	\$5,000 <b>5-10 Year</b>	
1	801 Brulette Place	Sewage treatment plant Sewage treatment plant Sewage treatment plant	Site Visit / Photos S STP GEI	N 5 S-STP-GEN-5	26 Generator (STP)	Gaurdian 1 ea 2000	40	22	\$40,000	\$40,000	Fair Does not meet standard		3 3	3 Replace generator for STP (scheduled). Capital Renewal	\$40,000 <u>2-5 Year</u>	
1	801 Brulette Place	Sewage treatment plant	Site Visit / Photos S STP UV	V 6 S-STP-UV-6	22, 23 UV filter unit	2 ea 2000	20	2	\$5,000	\$10,000	Good Meets standard		2 3	3 Inspect/assess UV filter in STP to ensure it is performing well. Operations	\$2,000 2-5 Year	
2	801 Brulette Place	Sewage treatment plant	Site Visit / Photos S STP STF	P 8 S-STP-STP-8	11, 12 Sewage treatment plant, RBC unit	1 ea 2000	80	62	\$500,000		Good - recently rebuilt gear drip Meets standard	Able to meet capacity, 19 units	2 3		\$5,000 <u>2-5 Year</u>	
2	801 Brulette Place	Sewage treatment plant	Site Visit / Photos S STP PP	P 9 S-STP-PP-9	11, 12     Process piping c/w valves, pipes	1 LS 2000	40	22	\$50,000	\$50,000	Good Meets standard		2 3	3 Inspect/assess process piping for deterioration to determine re Operations	ncluded above 2-5 Year	
										4.00.000						
3	801 Brulette Place	Sewage treatment plant	Site Visit / Photos S STP STF	P 10 S-STP-STP-10	13 to 15 Sewage treatment plant, RIB field	1 ea 2000	80	62	\$100,000	\$100,000	Good - permit in place Meets standard	Able to meet capacity	2 3	3 Review condition of RIB treatment system for deterioration to Operations	\$5,000 2-5 Year	
	801 Brulette Place	Courses treatment alout			27.20 Lift station (nort of CTD)	1 ea 2000	40	22	\$250,000	<u>۶</u> ۵ \$250,000				2	62.000 2.5.Veer	
4	801 Brulette Place	Sewage treatment plant Sewage treatment plant	Site Visit / Photos S LS WV	VV 11 S-LS-VV VV-11 AD 12 S_LS_DMD_12	27, 28 Litt station (part of STP)		20	22	\$250,000	\$250,000	Good Meets standard	Able to meet capacity	2 3	3Inspect/assess lift station and pumps to ensure they are perforOperations3Inspect/assess lift station and pumps to ensure they are perforOperations	\$2,000 2-5 Year ncluded above 2-5 Year	
4	801 Brulette Place	Sewage treatment plant	Site Visit / Photos     S     LS     WV       Site Visit / Photos     S     LS     PM       Site Visit / Photos     S     LS     PP	P 14 S-I S-PP-14	27, 28Lift station (part of STP)27, 28Pump (STP LS)27, 28Process piping c/w valves, pipes	2         ea         2000           1         LS         2000	40	2	\$50,000	\$50,000	GoodMeets standardGoodMeets standard		2 3		ncluded above 2-5 Year	
									\$50,000	\$30,000						
									Refer to Brulette Place Sewer					Ret	er to Brulette	
5	801 Brulette Place	Lift station	Site Visit / Photos S LS BL	.D 15 S-LS-BLD-15	4 Lift station building	1 ea 2000	40	22	System Building Condition						ce Sewer System	
									Assessment.						ding Condition essment.	
5	801 Brulette Place	Lift station	Site Visit / Photos     S     LS     BLI       Site Visit / Photos     S     LS     PM       Site Visit / Photos     S     LS     PP       Site Visit / Photos     S     LS     COM       Site Visit / Photos     S     LS     COM	.D 16 S-LS-BLD-16	4 Lift station wet well	1         ea         2000           2         ea         2000	40	22	\$250,000	\$250,000	Good (new) Meets standard	Able to meet capacity, very low flows	2 3	3 Inspect/assess lift station and pumps to ensure they are perfor Operations	\$2,000 <u>2-5 Year</u>	
5	801 Brulette Place	Lift station	Site Visit / Photos S LS PM	1P 17 S-LS-PMP-17	3 Pump (LS)	2 ea 2000	20	2	\$5,000	\$10,000	Good Meets standard	Able to meet capacity	2 3		ncluded above 2-5 Year	
5	801 Brulette Place	Lift station	Site Visit / Photos S LS PP	P 19 S-LS-PP-19	3 Process piping c/w valves, pipes	1 LS 2000	40	22	\$50,000	\$50,000	Good Meets standard		2 3		ncluded above 2-5 Year	
5	801 Brulette Place	Lift station	Site Visit / Photos S LS CON	20 S-LS-COM-20	NA Communications (LS)	<u>1 LS 2000</u>	10	0	\$9,000	\$9,000	Good Meets standard		2 3		ncluded above 2-5 Year	
5	SOT BLUIETTE FIACE		Site Visit / Photos S LS GEI	IN 21 S-LS-GEN-21	2, 4, 5 Generator (LS)	1 ea 2000	40	22	\$40,000	\$40,000	Good Meets standard		2 3	3 Inspect/assess lift station and pumps to ensure they are perfor Operations	ncluded above 2-5 Year	
6	801 Brulette Place	Brulette Pl. / Lane A/B	151-01 S SS MH	Н 22 С_СС_МН_22	Sewer manhole, SMH 1-5	Concrete 5 ea 2003	40	25	\$8,000	\$40.000			1 1		10+ Voar	
6	801 Brulette Place	Brulette Pl. / SMH1 to SMH2	151-01 S SS S	22     3-33-1011-22       5     27     \$-\$\$<-\$7	Gravity Sewer main, 200mm, Depth 2.5m, Paved road	Concrete         5         ea         2003           PVC         35         m         2003           PVC         210         m         2003	80	65	\$550	\$19,250					10+ Year	
6	801 Brulette Place	Brulette PI./Lane A/B SMH 2-3-4-5			Gravity sewer main, 150mm, Depth 2.5m, Paved road	PVC 210 m 2003	80	65	\$500	\$105.000					10+ Year	
6	801 Brulette Place	Brulette PI. (all)	151-01         S         SS         S           151-01         S         SS         SV		25mm Service Lines (approx. 5m each c/w clean-out)	37 ea 2003	40	25	\$405	\$15,000			1 1	5	10+ Year	
7	801 Brulette Place	BRULETTE PLACE	GIS S SS S		Forcemain, 50mm	129 m 2000	80	62	\$400	\$51,482			1 1	5	10+ Year	
7	801 Brulette Place	BRULETTE PLACE	GIS S SS S		Forcemain, 50mm         Forcemain, 75mm	410 m 2000	80	62	\$425	\$174,098			1 1	5	10+ Year	
7	801 Brulette Place	BRULETTE PLACE	GIS S SS S	5 32 S-SS-S-32	Sewermain, 150mm (GIS minus catalogued length from 151-01)	31 m 2000	80	62	\$500	\$15,532			1 1	5	10+ Year	
7	801 Brulette Place	BRULETTE PLACE	GIS S SS S	5 33 S-SS-S-33	Sewermain, 200mm (GIS minus catalogued length from 151-01)	9 m 2000	80	62	\$550	\$5,168			1 1	5	10+ Year	
										1-						
8	801 Brulette Place	Entire system	GIS S SS SV	v 34 SSSSV34	Service Connections, Sewer (GIS minus catalogued amount from 151-01)	0 ea 2000	40	22	\$3,000	ŞO					10+ Year	
	Bluiette Place									-						

SEWAGE TREATMENT PLANT	-
FIELD INSPECTION	MORRISON HERSHFIELD
SYSTEM: Brulette Place Sever	DATE: Nov 23/17
LOCATION: SYSTEM 801 CODE:	PROJECT No.: 5170700
INSPECTED BY	CVRD STAFF PRESENT:
1) <u>Type of Treatment System (Schematic)</u>	1-19 homes a registration not mety class 1-30 homes 4
2) Site Conditions/Security	
3) Condition of Structure:	

801 (1)



**801 (2)** 1 of 14



801 (3)



**801 (4)** 2 of 14



801 (5)



**801 (6)** 3 of 14



801 (7)



**801 (8)** 4 of 14



801 (9)



**801 (10)** 5 of 14



801 (11)



**801 (12)** 6 of 14



801 (13)



**801 (14)** 7 of 14



801 (15)



**801 (16)** 8 of 14



801 (17)



**801 (18)** 9 of 14



801 (19)



**801 (20)** 10 of 14



801 (21)



**801 (22)** 11 of 14



801 (23)



**801 (24)** 12 of 14



801 (25)



**<sup>801 (26)</sup>** 13 of 14



801 (28)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Brulette Place Sewer - Com. Kiosk - Functional Code 801

			dno		a	COI	MPONENT	CONDITION ASSESSMENT			LIFECYCLE DAT	A	RECOMMEN		If recommended				OPINION OF PROBABLE COST										
BLDG Name	BLDG Type	Function Code	Level 1 Major Grc Elements	Level 2 Group Elements	Level 3 Individu. Elements	D	Location / Type	Photo Description & History	Condition	Yr New or Last Major Action	Assessment Date Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	work not complete can the rate of deterioration be expected to increase ?	this system lead	Can the current condition adversely affect the buildings security of safety ?	anti	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Brulette Place : Sewer - Com. Kiosk	Sewer Service Building	801	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	<ol> <li>The foundation is comprised of cast-in-place concrete footings with concrete foundation walk. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.</li> <li>The age of the structure was not reported and has been assumed.</li> </ol>	5 5	2010	21-Nov-17 MH	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	120	\$20	SF	\$2,400	0%	5%	5%	\$3,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	5 5	2010	21-Nov-17 MH	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	120	\$10	SF	\$1,200	0%	5%	5%	\$2,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	B Shell	B10 Superstructure	B10 Superstructure	e B10 Superstructure	Interior of Building/ General Superstructure	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation.     No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5 5	2010	21-Nov-17 MH	8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	120	\$40	SF	\$4,800	0%	5%	5%	\$6,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	Painted cementitious siding and wood trim are present on the exterior walls.	4 4	2010	21-Nov-17 MH	8	12	4	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	200	\$8	SF	\$1,600	0%	15%	5%	\$2,000
Brulette Place : Sewer - Com. Kiosk	Sewer Service Building	801	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls 8201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted cementitious siding and wood trim are present on the exterior walls.</li> </ol>	5 5	2010	21-Nov-17 MH	8	50	42	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	200	\$35	SF	\$7,000	0%	5%	5%	\$8,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	IIs B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	5 5	2010	21-Nov-17 MH	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	60	\$20	SF	\$1,200	0%	10%	5%	\$2,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1 Two painted metal doors are present on the building.	5 5	2010	21-Nov-17 MH	8	30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA	\$500	0%	5%	5%	\$1,000
srulette Place	Sewer Service Building	801	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1 The roof is sloped roof assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders which drain to grade.	5 5	2010	21-Nov-17 MH	8	25	17	Replace the roof at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.		3 - Future Renewal	No	Yes	No	No	150	\$30	SF	\$4,500	0%	5%	5%	\$5,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1 The roof is sloped roof assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders which drain to grade.	5 5	2010	21-Nov-17 MH	8	25	17	Replace gutters at the end of their service life.	e Replacement	3 - Future Renewal	Yes	Yes	No	No	40	\$10	SF	\$400	0%	10%	5%	\$1,000
Brulette Place	Sewer Service Building	801	C Interiors	C30 Interior Finishe	s C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	The interior gypsum and plywood walls and ceilings are painted.	5 5	2010	21-Nov-17 MH	8	20	12	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS	\$500	0%	0%	5%	\$1,000
Brulette Place Sewer - Com. Kiosk	Sewer Service Building	801	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	5 5	2010	21-Nov-17 MH	8	20	13	Repaice lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District	
Facility Condition Assessment and Capital Plan	

Brulette Place Sewer - Com. Kiosk - Functional Code 801
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			ę	ints	_	co	MPONENT		CONDITION ASSESSMEN	т				LIFECYCLE DA	ТА	RECOMMENDATION			If recommend	ed				OPINION C	OF PROBABLE	E COST			10-YEAR (	APITAL PLAN				
BLDG Name	B LD G Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elem	Level 3 Individua Elements	D	Location / Type	Photo	Description & History	Condition	Performance Yr New or Last Major Action	Assessment Date Assessment Date	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Deteroiter	phased ov	work not be complete can r rate of s ? deterioration expected to increase ?	will a failure this system le to a loss of us the facility	e of the buildings	ant	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin- gency	5% Tax	Total in 2017 Dollars	2018 \$0	2019 202 \$0 \$0		2023 \$0	2024 2 \$0	2025 2026 2027 \$0 \$0 \$0
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 A Sub	abstructure A	10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundation	ns 1	The foundation is compresed of cast-in-place concrete footing- with concrete foundation walks. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the structure was not reported and has been assumed.	5	5 2010	21-Nov-17 MI	1 8	50	42	The foundations are expected to remain Not Ap serviceable for the life of the building. No capital expenses associated with this item are expected.	icable No Applie	t Yes	Yes	Yes	No	120	\$20 SF	\$2,400	0%	5%	5%	\$3,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 A Sub	ubstructure A	10 Foundations	A1030 Slab on G	rade A103001 Standard Slat on Grade	<ul> <li>Interior of Building At-Grac</li> <li>Slab-on-Grade</li> </ul>	de/ 1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	\$ 5	5 2010	21-Nov-17 MI	1 8	50	42	The concrete slab-on-grade is expected to Not Ap remain serviceable for the life of the building, with isolated reparts, if needed. No capital expenses associated with this item are expected.	icable No Applie		Yes	Yes	No	120	\$10 SF	\$1,200	0%	5%	5%	\$2,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 B She	nell B	10 Superstructure	B10 Superstruct	ure B10 Superstructure	Interior of Building/ Gener Superstructure	ral 1	The supertructure is comprised of wood framing on all four walk and roof trustes, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5	5 2010	21-Nov-17 MI	1 8	50	42	Interior protected structural components Not Ap are expected to last the life of the building. No ways capital expenditures are expected to be required.	icable No Applie		Yes	Yes	No	120	\$40 SF	\$4,800	0%	5%	5%	\$6,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 B She		B20 Exterior nclosure	B2010 Exterior V	Valls B201001 Exterior Enclosure	Exterior Walls/ Cementitio Siding	us 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4 2010	21-Nov-17 Mi	4 8	12	4	Repaint siding and trim. Repair A At the time of painting, replace sealant joints and wood trim as required.	wance 3 - Fu Rene		Yes	No	No	200	\$8 SF	\$1,600	0%	15%	5%	\$2,000			\$2,000			
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 B She		B20 Exterior nclosure	B2010 Exterior V	Valls B201001 Exterior Enclosure	Exterior Walls/ Cementitio Siding	us 1	Painted comentitious siding and wood trim are present on the exterior walls.	5	5 2010	21-Nov-17 Mi	1 8	50	42	The cementilious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	nent 3 - Fu Rene	ture Yes wal	Yes	No	No	200	\$35 SF	\$7,000	0%	5%	5%	\$8,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 B She		B20 Exterior nclosure	B2010 Exterior V	Valls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5	5 2010	21-Nov-17 MI	4 8	50	42	The perforated metal soffit is expected to Replac last the life of the building. No capital expenses associated with this item are expected.	nent 3 - Fu Rene		Yes	No	No	60	\$20 SF	\$1,200	0%	10%	5%	\$2,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 B She	nell B	20 Enclosure	E2030 Exterior D	oors 8203001 Solid Doors	Exterior Walls/ Door	1	Two painted metal doors are present on the building.	5	5 2010	21-Nov-17 MI	4 8	30	22	Replace doors at the end of their service Replace fife.	nent 3 - Fu Rene		Yes	No	No	1	\$500 EA	\$500	0%	5%	5%	\$1,000						
Brulette Place Ser - Com. Kiosk	ver Service 8 Building	801 B She	nell D	30 Roofing	B3010 Roof Coverings	8301001 High Slope Roof Coverings	Roof/Sloped Roof Assembl	ly 1	The roof is sloped roof assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders which drain to grade.	5	5 2010	21-Nov-17 MI	4 8	25	17	Replace the roof at the end of its service Replac life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	nent 3 - Fu Rene	ture No wal	Yes	No	No	150	\$30 SF	\$4,500	0%	5%	5%	\$5,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 B She	nell C	30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembl	ly 1	The roof is sloped roof assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders which drain to grade.	5	5 2010	21-Nov-17 MI	4 8	25	17	Replace gutters at the end of their service Replace life.	nent 3 - Fu Rene		Yes	No	No	40	\$10 SF	\$400	0%	10%	5%	\$1,000						
Brulette Place Ser - Com. Kiosk	ver Sewer Service 8 Building	801 C Inte	teriors C	30 Interior Finishes	C3010 Wall Finis	hes C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes		The interior gypsum and plywood walls and cellings are painted.	5	5 2010	21-Nov-17 MI	4 8	20	12	Repaint interiors as required. Repair A Note: a long service life has been included to reflect to building usage.	wance 3 - Fu Rene		Yes	No	No	1	\$500 LS	\$500	0%	0%	5%	\$1,000						
Brulette Place Ser - Com. Kiosk	ver Service 8 Building	801 C Inte	teriors D	50 Electrical	D5020 Lighting a Branch Wiring	nd D502002 Lighting Equipment	Exterior Lighting Equipmer	nt	An exterior light is present on the building near the entrance.	5	5 2010	21-Nov-17 MI	1 8	20	13	Repaice lights at the end of their service Replac	nent 3 - Fu Rene	ture Yes wal	Yes	No	No	1	\$200 LS	\$200	0%	0%	5%	\$1,000						

Photo 1

### Cowichan Valley Regional District

Bruletter Place Sewer - Com. Kiosk - Functional Code 801

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Brulette Place Sewer - Lift Station - Functional Code 801

	a de de r			<u>.</u>	COL	MPONENT	CONDITION ASSESSMENT					_		_	LIFECYCLE DAT	Ά	RECOMMENDATION				If recommended work not		Can the current		_		OPINION OF	PROBABLE	соѕт		
BLDG Name	BLDG Type	Level 1 Major Gr	Level 2 Group Elements	Level 3 Individu Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	work not complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?	condition	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	A Substructu	e A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the structure was not reported and has been assumed.	5	5	2010	21-Nov-17	МН	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$20	SF	\$1,000	0%	5%	5%	\$2,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	A Substructu	e A10 Foundations	A1030 Slab on Gra	de A103001 Standard Slab on Grade	Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5	2010	21-Nov-17	МН	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$10	SF	\$500	0%	5%	5%	\$1,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	B Shell	B10 Superstructure	B10 Superstructur	e B10 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5	5		21-Nov-17		8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$40	SF	\$2,000	0%	5%	5%	\$3,000
Sewer - Lift Station	Sewer 801 Service Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	Ils B201001 Exterior Enclosure	Exterior Walls/ Metal Siding	1	Painted metal siding (with exposed fasteners) is present on the exterior walls.	4	4	2010	21-Nov-17	МН	8	12	4	Complete fastener and sealant replacement as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS	\$500	0%	15%	5%	\$1,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	IIs B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	5 1	Painted metal siding (with exposed fasteners) is present on the exterior walls.	5	5	2010	21-Nov-17	МН	8	50	42	The metal siding is expected to last the life of the building.	Replacement	3 - Future Renewal	Yes	Yes	No	No	180	\$35	SF	\$6,300	0%	5%	5%	\$7,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	IIs B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5	5	2010	21-Nov-17	МН	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	16	\$20	SF	\$320	0%	10%	5%	\$1,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	Two painted metal doors are present on the building.	5	5	2010	21-Nov-17	МН	8	30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA	\$500	0%	5%	5%	\$1,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is standing seam metal roof. The roof is edge drained.	5	5		21-Nov-17			40	32	Replace the metal roof at the end of its service life. Orgoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations. It is assumed that this work would be completed with the siding remedial work.	Replacement	3 - Future Renewal	No	Yes	Νο	No	60	\$30	SF	\$1,800	0%	5%	5%	\$2,000
Brulette Place Sewer - Lift Station	Sewer 801 Service Building	C Interiors	C30 Interior Finishe	s C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior plywood walls are not painted painted, the gypsum sheathing is painted.	5	5	2010	21-Nov-17	МН	8	20	12	Repaint interiors as required. Cost assumed that walls will be painted. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	ى	\$500	0%	0%	5%	\$1,000
	Sewer 801 Service Building	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	5	5	2010	21-Nov-17	МН	8	20	13	Repalce lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District	
Facility Condition Assessment and Capital Plan	

Brulette Place Sewer - Lift Station - Functional Cod	e 801
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			9	ents	_		COMPONENT		CONDITION ASSESSMEN	т				L	LIFECYCLE DAT	ſA	RECOMMEN	IDATION			If recommended	1				OPI	NION OF PI	ROBABLE COST			10-YEAR C	APITAL PLAN				
BLDG Name	B LD G Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elem	Level 3 Individua Elements	IJ	Location / Type	Photo	Description & History	Condition	Yerrormance Yr New or Last Maior Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	rate of	this system lead	Can the current condition adversely affect the buildings security of safety	antity .	Unit Rate		Replace ment Cost	Consult. Contin- serv	5% Tax	Tota	2018 \$0	2019 202 \$0 \$0			2024 2025 \$0 \$0	
Brulette Place Sewe - Lift Station	Sewer I Service Building	801 A S	Substructure	A10 Foundations	A1010 Standari Foundations	A 101001 Wall Foundations	Underground/ Founda	tions 1	The foundation is comprised of cast-in-place concrete footing- with concrete foundation walk. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the structure was not reported and has been assumed.	5	5 2010	0 21-Nov	17 MH	8	50	42	The foundations are expected to remain serviceable for the life of the building. N capital expenses associated with this iten are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$20	SF S:	,000	0% 59	5 5%	\$2,000						
Brulette Place Sewe - Lift Station	Sewer I Service Building	801 A S	Substructure	A10 Foundations	A1030 Slab on	arade A103001 Standari on Grade	d Slab Interior of Building At- Slab-on-Grade	Srade/ 1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5 2010	0 21-Nov	17 MH	8	50	42	The concrete slab-on-grade is expected t remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$10	SF \$	500	0% 59	5 5%	\$1,000						
Brulette Place Sewe - Lift Station	Sewer b Service Building	801 B S	Shell	B10 Superstructur	e B10 Superstruc	ture B10 Superstructu	re Interior of Building/ Ge Superstructure	meral 1	The supertructure is comprised of wood framing on all four walls and roof trusks, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reports. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.					8	50	42	Interior protected structural component are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50					5%							
Brulette Place Sewe - Lift Station	Sewer I Service Building	801 B S	Shell	CB20 Exterior Enclosure	B2010 Exterior	Walls B201001 Exterior Enclosure	Exterior Walls/ Metal S	iding 1	Painted metal siding (with exposed fasteners) is present on the exterior walls.				17 MH		12	4	Complete fastener and sealant replacement as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1				0% 15	6 5%				\$1,00	10		
Brulette Place Sewe - Lift Station	Sewer I Service Building	801 B S	Shell	CB20 Exterior Enclosure	B2010 Exterior	Walls B201001 Exterior Enclosure	Exterior Walls/ Cemen Siding	titious 1	Painted metal siding (with exposed fasteners) is present on the exterior walls.	5	5 2010	) 21-Nov	17 MH	8	50	42	The metal siding is expected to last the lift of the building.	e Replacement	3 - Future Renewal	Yes	Yes	No	No	180	\$35	SF \$4	i,300	0% 59	5%	\$7,000						
Brulette Place Sewe - Lift Station	Sewer I Service Building	801 B S	Shell	CB20 Exterior Enclosure		Walls B201001 Exterior Enclosure		1	Perforated metal soffit is present at the roof overhangs.				17 MH		50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	16			320	0% 10	6 5%							
Brulette Place Sewe - Lift Station	Service Building	801 B S	Shell	B20 Enclosure	E2030 Exterior	Doors 8203001 Solid Do	ors Exterior Walls/ Door	1	Two painted metal doors are present on the building.	5	5 2010	0 21-Nov	17 MH	8	30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA \$	500	0% 59	5%	\$1,000						
Brulette Place Sewe - Lift Station	Sewer i Service Building	801 B S	Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slo Roof Coverings	pe Roof/Sloped Roof Asse	mbly 1	The roof is standing seam metal roof. The roof is edge drained.	5	5 2010	0 21-Nov	17 MH	8	40	32	Replace the metal roof at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations. It is assumed that this work would be completed with the siding remedial work	Replacement	3 - Future Renewal	No	Yes	No	No	60	\$30	SF \$:	,800	0% 59	5 5%	\$2,000						
Brulette Place Sewe - Lift Station	Sewer I Service Building	801 C Ir	Interiors	C30 Interior Finish	es C3010 Wall Fini	ihes C301003 Gypsum Wallboard Finishe	Interior/Interior Finish	es 2	The interior physical walls are not painted painted, the gypsum sheathing is painted.	5	5 2010	0 21-Nov	17 MH	8	20	12	Repaint interiors as required. Cost assumed that walls will be painted. Note: a long service life has been include to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS \$	500	0% 09	5%	\$1,000						
Brulette Place Sewe - Lift Station	Sewer s Service Building	801 C Ir	Interiors	D50 Electrical	D5020 Lighting Branch Wiring	and D502002 Lighting Equipment	Exterior Lighting Equip	ment	An exterior light is present on the building near the entrance.	5	5 2010	21-Nov	17 MH	8	20	13	Repake lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	15 \$	200	0% 09	5 5%	\$1,000						



Photo 1



Photo 2

Seaforth - Defficiency Review

Cowichan Valley Regional District

July 18, 2018

**Date Prepared** 

Infrastructure Condition Assessment and Capital Plan

2372 Coopers Hawk Rise, Mill Bay, BC

### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$7,970,841	
Number of Users	95	
Replacement Cost Per User	\$83,904	
Annual Replacement Cost (40 Years)	\$93,659	per year
Annual Replacement Cost (80 Years)	\$98,405	per year
10 Year Capital Plan Total	\$230,000	
10 Year Operations and Maintenance Plan Total	\$80,000	

#### **PROPERTY DESCRIPTION**

The Sentinel Ridge Sewer system is a new system that was originally constructed in 2006 and includes the phases listed in the table below.

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Development	Year Installed	Source
Treatment System	2006	CVRD Input
Collection System	2006	CVRD Input
Sentinel Drive, Dagall Rd, Rozon Rd, Coopers Hawk Rise, Bay Bluff Pl	2006	Record Drawing (22375_01_D1_Rev_H)
Hidden Creek Lift Station	2006	CVRD Input
Sentinel Dr, Tercel Court	2010	Record Drawing (22375.01))
Mill Bay Marina Lift Station	2012	Record Drawing (101-15273-01)
Handy Road and Mill May Marina	2012	Record Drawing (101-15273-01)
Mill Bay Place and Sangster Road	2013	Record Drawing (23019_01)
Treatment System Upgrade	2013	Record Drawing (12-089)
Noowick Road	2015	Record Drawing (28367_01_D1)

### PROJECT TEAM

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

### CONTACT INFORMATION

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**Date Prepared** 

July 18, 2018

# 802 - Sentinel Ridge Sewer

Infrastructure Condition Assessment and Capital Plan 2372 Coopers Hawk Rise, Mill Bay, BC

REPORT NOTES		
Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 2, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
June 29, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New

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## 802 - Sentinel Ridge Sewer

Infrastructure Condition Assessment and Capital Plan 2372 Coopers Hawk Rise, Mill Bay, BC

Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical (0 - 1 Year)	2						\$0
(0-1 (ear)	3						
	4						
Important (1 - 2 Year)	5						\$0
(1-2 (ear)	6						
Short Term	7	1	S-STP-BLW-19	Capital Upgrade/New	Install new blowers in STP to double capacity when system is expanded (scheduled).	\$200,000	¢200.000
(2 - 5 Year)	8						\$200,000
	9						
	10	1	S-STP-STP-2	Capital Upgrade/New	Add Purafil unit to STP for odour control (scheduled).	\$30,000	
Medium Term	11						\$30,000
(5 - 10 Year)	12						
						Total	\$230,000

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 fear)	3						
luc a cuto a t	4						
Important (1 - 2 Year)	5						\$0
(1-2 Teal)	6						
	7	1	As Noted	Operations	Inspect/assess STP and treatment process for deterioration to determine replacement timing/phasing.	\$15,000	
Short Term (2 - 5 Year)	8	2	ALL	Operations	Inspect/assess Mill Bay marina lift station for deterioration to determine replacement timing/phasing.	\$10,000	
	9	3	ALL	Operations	Inspect/assess Hidden Creek lift station for deterioration to determine replacement timing/phasing.	\$10,000	\$35,000
	10						
	11						
	12						
	13	2	S-LS-WW-40	Operations	Continue to work with Marina to limit FOG (fats, oils and grease) entering Mill Bay marina lift station.	\$5,000	
Medium Term	14	4 to 7, 9, 10, 13 to 27	As Noted	Operations	Assess/Inspection forcemain for deterioration to determine replacement timing/phasing.	\$30,000	\$45,000
(5 - 10 Year)	15	28	S-STP-DF-108	Operations	Assess/Inspection disposal field for deterioration to determine replacement timing/phasing.	\$10,000	
	16						
	17						
		L L				Total	\$80,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner: System: Civic Address:	802 2372 Coc	Sentir opers Hawk Rise	al District (CVRD) nel Ridge Sewer						rastructure Condition Asse	essmen																			
Geographic Location Customers:	n: South of Parcels: Users:	f Mill Bay 147 95			Note: Update geo	odatabase (does no	<mark>ot match record drawin</mark>	ngs).							Curren	it Year	2018	Total Replacement Value Value per user	\$7,970,841 \$83,904										
Asset ID		Locati on Code	ion Address	Location	DWG Ref	Major Mir	Asset Code inor Spec ID	Asset Code	Photo	Description	Make Model	Material Quantit	Asset Inventory y Quantity Unit	Year Installed Year	ear Renewed Service Life I	Expectancy Est. Rel	naining Service Life	Unit Price	Replacement Value of A	sset sical Condi Level of Service Cc	Condition Assessment ondition Demand Condition	Probablity of Failure	Severity of Failure		ecommendations / Action Items Description	Type of Work		Timing Comment	nt/Question to be resolved
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	12-089	S ST	TP STP 1	S-STP-STP-1	31 to 57, MOV 1	Sewage treatment plant		1	еа	2006	40	0	28	Refer to Brulette Place Sewer System Building Condition Assessment.									Refer to Brulette Place Sewer System Building Condition Assessment.		
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	12-089	S ST	TP STP 2	S-STP-STP-2	31 to 57, MOV 1	Purafil Odour control unit		0	еа	2006	40	0	28	\$30,000	\$0			2	2		dd Purafil unit to STP for odour control cheduled).	Capital Upgrade/New		5-10 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	12-089	S ST	TP FTR 3	S-STP-FTR-3	36, 37	Salsnes filter		2	еа	2013	20	0	15	\$100,000	\$200,000			2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	\$15,000	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	12-089	S ST	TP ET 5	S-STP-ET-5	38	Equalization tank 1 (30m3)		1	ea	2006	40	0	28	\$100,000	\$100,000			2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
1	80	302 2372 0	Coopers Hawk Rise	Sewage treatment plant	12-089		TP VAL 6	S-STP-VAL-6	41 to 47, 56, 57	Process piping, c/w valves, pipes, tees		1	ea	2006	40	0	28	\$100,000	\$100,000	Good Meets standard		2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	Site Visit / Photo		TP COM 7	S-STP-COM-7	49 to 53	Communications (STP)		1	LS	2006	10	0	0	\$50,000	\$50,000	Good Meets standard		2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	Site Visit / Photo		TP GEN 8		38, 40	Generator (STP)	Generac	1	ea	2006	40	0	28	\$100,000	\$100,000	Good Meets standard		2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	Site Visit / Photo		TP UV 9	S-STP-UV-9	43, 46	UV unit	Trojan UV 3000 PTP	2	ea	2006	20	0	8	\$25,000	\$50,000	Good Meets standard		2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	Site Visit / Photo		TP PMP 11		52	Pump (STP)		8	ea	2006	20	0	8	\$10,000	\$80,000	Good Meets standard		2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	Site Visit / Photo	tos S ST	TP BLW 19		42 to 47	Blower (STP)		4	ea	2006	20	0	8	\$50,000	\$200,000	Fair Meets standard		2	3	3 ca (si	astall new blowers in STP to double apacity when system is expanded cheduled).	Capital Upgrade/New	\$200,000	2-5 Year	
1	80	302 2372 (	Coopers Hawk Rise	Sewage treatment plant	Site Visit / Photo		TP FTR 23		54, 55	Membrane bioreactor (MBR)		1	LS	2006	40	0	28	\$250,000	\$250,000			2	3	3 fo	spect/assess STP and treatment process or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS PMP 24		16, 17	Pump, 9-stage submersible turbine pump	Pentair 6T10-75	2	еа	2012	20	0	14	\$50,000	\$100,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	\$10,000	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS PMP 26	S-LS-PMP-26	17	150mm Submersible motor, 10hp, 230/3/60	Franklin	2	еа	2012	20	0	14	\$25,000	\$50,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01		LS MH 28	S-LS-MH-28	2, 9, 11, to 14	Manhole frame and cover	Dobney foundry C-43	4	ea	2012	40	0	34	\$100,000	\$400,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS FTR 32	S-LS-FTR-32	8, 9	Effluent filter p/n 5000-0007 rated 4000 gpm each c/w fil	tratio Zoeller	2	еа	2012	20	0	14	\$25,000	\$50,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS PMP 34	S-LS-PMP-34	17	Pump, solids handling pump, 1.5hp 230/3/60	Barnes 3SE1594DS	2	ea	2012	20	0	14	\$5,000	\$10,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS PP 36		11 to 14	Process piping c/w valves, piping, ultrasonic level controls	s	1	ea	2012	40	0	34	\$50,000	\$50,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS VC 37	S-LS-VC-37	11 to 14	Valve chamber c/w valves, concrete chamber, piping		1	еа	2012	40	0	34	\$100,000	\$150,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	101-15273-01	1 S L	LS WW 38		16, 17	Pump chamber c/w process piping		1	ea	2012	40	0	34	\$250,000	\$250,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	Site Visit / Photo		LS BLD 39	S-LS-BLD-39	1 to 17	Lift station building (Mill bay marina LS)		1	ea	2012	40	0	34	Refer to Brulette Place Sewer System Building Condition Assessment.									Refer to Brulette Place Sewer System Building Condition Assessment.		
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	Site Visit / Photo		LS WW 40		1 to 17	Lift station wet well (Mill bay marina LS)		1	ea	2012	40	0	34	\$250,000	\$250,000	Good Meets standard	Able to meet capacity, occasior	na 2	2	4 FC	ontinue to work with Marina to limit DG (fats, oils and grease) entering Mill ay marina lift station.	Operations	\$5,000	5-10 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	Site Visit / Photo		LS GEN 40	S-LS-GEN-40	3, 4	Generator (Mill bay marina LS)		1	ea	2012	40	0	34	\$50,000	\$50,000	Good Meets standard		2	3	In 3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
2	80	302 2372 (	Coopers Hawk Rise	Mill Bay marina lift station, Handy rd	Site Visit / Photo		LS COM 41	S-LS-COM-41	6, 7	Communications (Mill bay marina LS)		1	LS	2012	10	0	4	\$10,000	\$10,000	Good Meets standard		2	3	3 fo	spect/assess Mill Bay marina lift station or deterioration to determine eplacement timing/phasing.	Operations	Included above	2-5 Year	
3	80	302 2372 (	Coopers Hawk Rise	Hidden Creek lift station	Site Visit / Photo		LS BLD 42		19 to 30	Lift station building (Hidden creek)		1	ea	2006	40	0	28	Refer to Brulette Place Sewer System Building Condition									Refer to Brulette Place Sewer System Building Condition		
3	80	302 2372 (	Coopers Hawk Rise	Hidden Creek lift station	Site Visit / Photo		LS BLD 43	S-LS-BLD-43	19 to 30	Lift station wet well (Hidden creek)		1	еа	2006	40	0	28	Assessment. \$250,000	\$250,000	Good Meets standard	Able to meet capacity, capacity	/ f 2	3	3 fo	spect/assess Hidden Creek lift station or deterioration to determine	Operations	Assessment. \$10,000	2-5 Year	
3	80	302 2372 (	Coopers Hawk Rise	Hidden Creek lift station	Site Visit / Photo		LS PMP 44	S-LS-PMP-44	29, 30	Pump, 23 HP (Hidden creek LS)	Flygt	2	еа	2006	20	0	8	\$25,000	\$50,000	Good (new Meets standard	Able to meet capacity, capacity	/ f 2	3	In 3 fo	eplacement timing/phasing. spect/assess Hidden Creek lift station or deterioration to determine	Operations	Included above	2-5 Year	
3	80	302 2372 (	Coopers Hawk Rise	Hidden Creek lift station	Site Visit / Photo		LS COM 46		23 to 27	Communications (Hidden creek LS)		1	LS	2006	10	0	0	\$10,000	\$10,000	Good Meets standard		2	3	In 3 fo	eplacement timing/phasing. spect/assess Hidden Creek lift station or deterioration to determine	Operations	Included above	2-5 Year	
3	80	302 2372 (	Coopers Hawk Rise	Hidden Creek lift station	Site Visit / Photo		LS GEN 47	S-LS-GEN-47	21, 22	Generator (Hidden creek LS)		1	еа	2006	40	0	28	\$100,000	\$100,000	Good Meets standard		2	3	In 3 fo	eplacement timing/phasing. spect/assess Hidden Creek lift station or deterioration to determine	Operations	Included above	2-5 Year	
4	80	302 2372 (	Coopers Hawk Rise	Coopers Hawk Rise 3+070 - 3+151	101-15273-02		M PP 48	S-FM-PP-48		Forcemain pipe, 75mm	DR11	HDPE 81	m	2013	80	0	75	\$425	\$34,425			1	3	As 4 de	eplacement timing/phasing. ssess/Inspection forcemain for eterioration to determine replacement	Operations	\$30,000	5-10 Year	
5	80		Coopers Hawk Rise	Frayne Rd 2+340 - 2+430	101-15273-02		M PP 49			Forcemain pipe, 75mm	DR11	HDPE 90	m	2013	80	0	75	\$425	\$38,250			1	3	tir As	ming/phasing. ssess/Inspection forcemain for eterioration to determine replacement	Operations	Included above	5-10 Year	
6	80		Coopers Hawk Rise	Huckleberry Rd 2+430 - 2+950	101-15273-02	2 S FI	M PP 50	S-FM-PP-50		Forcemain pipe, 75mm	DR11		m	2013	80	0	75	\$425	\$221,000			1	3	tir As	ming/phasing. ssess/Inspection forcemain for eterioration to determine replacement	Operations	Included above		
7			Coopers Hawk Rise	Handy rd. 0+035 - 0+225 (LS)	101-15273-01		M PP 51	S-FM-PP-51		Forcemain pipe, 75mm	DR11	HDPE 190		2013		0	75	\$425	\$80,750			1	3	As	ming/phasing. ssess/Inspection forcemains for eterioration to determine replacement	Operations	Included above	5-10 Year	
7	80		Coopers Hawk Rise	Handy rd, 1+010 - 1+040	101-15273-02	2 S FI	M PP 52			Forcemain pipe, 75mm	DR11	HDPE 30		2013	80	0	75	\$425	\$12,750			1	3	tir As 4 de	ming/phasing. ssess/Inspection forcemain for eterioration to determine replacement ming/phasing.	Operations	Included above		
7	80		Coopers Hawk Rise	Handy rd to STP, 1+010 - 3+160	101-15273-02	2 S FI	M VAL 53			Air release valve c/w chamber, valves, process piping, ma	anhole APCO Series 140C	4	ea	2013	40	0	35	\$25,000	\$100,000			1	3	As 4 de	ssess/Inspection air release valves for eterioration to determine replacement ming/phasing.	Operations	Included above	5-10 Year	
7 7 7 7 7	80 80 80 80 80	302       2372 (         302       2372 (         302       2372 (         302       2372 (	Coopers Hawk Rise Coopers Hawk Rise Coopers Hawk Rise Coopers Hawk Rise	Handy rd to STP, 1+010 - 3+160 Handy rd., Mill bay marina townhouses Handy rd., Mill bay marina townhouses, SMH A-SMH Handy rd., Mill bay marina townhouses, SMH B-SMH Handy rd., Mill bay marina townhouses	101-15273-01           1H (         101-15273-01           1H (         101-15273-01	1 5 5 1 5 5 1 5 5	M         CO         54           SS         MH         55           SS         S         56           SS         S         57           SS         SV         58	S-SS-IMH-55 S-SS-S-56 S-SS-S-57		Flushout c/w process piping, valves, tees, Sewer manhole, SMH A-C Sewermain, 200mm Sewermain, 150mm	SDR35 SDR35	PVC 50	ea m m	2013 2012 2012 2012 2012 2012	40 40 80 80	0 0 0 0 0 0 0 0	35 34 74 74 54	\$5,000 \$8,000 \$550 \$500 \$3,000	\$20,000 \$24,000 \$59,384 \$24,915 \$42,000			1 1 1 1 1	2 2 2 2 2 2	5 5 5 5 5				10+ Year 10+ Year 10+ Year 10+ Year	
7 8 8	80 80 80 80	302 2372 (	Coopers Hawk Rise Coopers Hawk Rise Coopers Hawk Rise	Handy rd., Mill bay marina townhouses Mill bay place Mill bay place	101-15273-01 23019 01 A2 23019 01 A2	S FI		S-SS-SV-58 S-FM-PP-59 S-SS-SV-60		Service connections Forcemain, 50mm Service connections	Sched 80	14 55 6	ea m ea	2012 2013 2013	60 80 60	0 0 0	54 75 55	\$3,000 \$400 \$3,000	\$42,000 \$22,000 \$18,000			1 1 1	2 2 2	5 5 5				10+ Year 10+ Year	
																			\$0										

9	802 2372 Coopers Ha	awk Rise Mill B	Bay rd 1+040 - 2+340	101-15273-02	S FM	PP 61 S-FM-PP-61	Forcemain pipe, 75mm DR11	HDPE 1300 m	2013	80	75	\$425	\$552,500	1 3 4	Assess/Inspection forcemain for deterioration to determine replacement Operations	Included above 5-10 Year
10	802 2372 Coopers Ha	awk Rise Noow	wick rd 2+950 - 3+070	101-15273-02	S FM	PP 62 S-FM-PP-62	Forcemain pipe, 75mm DR11	HDPE 120 m	2013	80	75	\$425	\$51,000	1 3 4	timing/phasing.         Assess/Inspection forcemain for         deterioration to determine replacement       Operations         Universe (abased)	Included above 5-10 Year
10 10	802 2372 Coopers Ha		wick rd, 1+090-1+223 wick rd, 1+090	28367 01 D1 28367 01 D1	S FM	PP         63         S-FM-PP-63           CO         64         S-FM-CO-64	Forcemain, 50mm     Forcemain cleanout c/w chamber, valves, process piping	HDPE         133         m           1         ea	2015	80 40	77	\$400 \$2.000	\$53,200 \$2,000	<u>    1   2  5</u> 1    2 5	timing/phasing.	10+ Year 10+ Year
11	802 2372 Coopers Ha		on rd, 1+000-1+090			PP 65 S-FM-PP-65	Forcemain, 50mm	HDPE 90 m	2015	80	77	\$400	\$36,000	1 2 5		10+Year
12	802 2372 Coopers Ha		gster rd. 0+005	23019 01 A2	S SS	MH 66 S-SS-MH-66	Cap, 100mm, 2m depth	1 ea	2013	60	55	\$3,000	\$3,000	1 2 5		10+ Year
12 12	802         2372 Coopers Ha           802         2372 Coopers Ha           802         2372 Coopers Ha	-	gster rd. 0+020 gster rd. Cap - SMH A	23019 01 A2 23019 01 A2	S SS	MH         67         S-SS-MH-67           S         68         S-SS-S-68	Sewer manhole, SMH A-C, Ex. SMH A, 1.2-2.5m depths         Sewermain, 100mm	4         ea           PVC         13         m	2013 2013	40 80	35 75	\$8,000 \$450	\$32,000 \$5,940	1     2     5       1     2     5		10+ Year       10+ Year
12 12	802         2372 Coopers Ha           802         2372 Coopers Ha	Ĵ	gster rd. SMH A-Ex. SMH A-B-C-Stub gster rd.	23019 01 A2 23019 01 A2	S SS	S         69         S-SS-S-69           SV         70         S-SS-SV-70	Sewermain, 200mm	PVC         330         m           4         ea	2013 2013	80 60	75 55	\$550 \$3,000	\$181,500 \$12,000	1         2         5           1         2         5		10+ Year       10+ Year
13	802 2372 Coopers Ha		tinel dr. SMH A-SMH F	22375.01.A1	S FM	PP 71 S-FM-PP-71	Forcemain pipe, 100mm	PVC 324 m	2010	80	72	\$450	\$145,688	1 3 4	Assess/Inspection forcemains for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
13 13	802         2372 Coopers Ha           802         2372 Coopers Ha           802         2372 Coopers Ha		tinel dr. tinel dr. SMH A-B-C-D-E-F	22375.01.A1 22375.01.A1	S SS S SS	MH         72         S-SS-MH-72           S         73         S-SS-S-73	Sewer manhole, SMH A-F, 1.2-2.7m depths         Sewermain, 200mm	6         ea           PVC         324         m	2010 2010	40 80	32 72	\$8,000 \$550	\$48,000 \$178,063	1         1         5           1         1         5		10+ Year       10+ Year
13	802 2372 Coopers Ha		tinel dr.			SV         74         S-SS-SV-74	Service connections	21 ea	2010	60	52	\$3,000	\$63,000			10+Year
14 14	802         2372 Coopers Ha           802         2372 Coopers Ha           802         2372 Coopers Ha		cel court, 6+005 - 6+115 cel court	22375.01.A2 22375.01.A1		PP         75         S-FM-PP-75           SV         76         S-SS-SV-76	Forcemain pipe, 50mm     SCHD 40       Service connections	PVC         110         m           8         ea	2010 2010	80 60	72       52	\$400 \$3,000	\$44,000 \$24,000	1         1         5           1         1         5		10+ Year       10+ Year
15	802 2372 Coopers Ha	awk Rise BAY B	BLUFF PLACE	GIS	S FM	PP 77 S-FM-PP-77	Forcemain, 50mm	59 m	2006	80	68	\$400	\$23,595	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
16	802 2372 Coopers Ha	awk Rise BICKF	(FORD WAY	GIS	S FM	PP 78 S-FM-PP-78	Forcemain, 100mm	392 m	2006	80	68	\$450	\$176,494	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
16 16	802         2372 Coopers Ha           802         2372 Coopers Ha           802         2372 Coopers Ha		KFORD WAY KFORD WAY	GIS GIS	S SS S SS	S         79         S-SS-S-79           S         80         S-SS-S-80	Sewermain, 150mmSewermain, 200mm	217 m 225 m	2006 2006	<u> </u>	68	\$500 \$550	\$108,299 \$123,712	1 2 5 1 2 5		10+ Year 10+ Year
17	802 2372 Coopers Ha	awk Rise BICKF	(FORD WAY	GIS			Forcemain, unknown diameter, assumed 100mm	2 m	2006	80	68	\$450	\$1,048	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
18	802 2372 Coopers Ha	awk Rise COOF	OPERS HAWK RISE	GIS		PP 82 S-FM-PP-82	Forcemain, 50mm	91 m	2006	80	68	\$400	\$36,569	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
18	802 2372 Coopers Ha	awk Rise COOF	DPERS HAWK RISE	GIS		PP 83 S-FM-PP-83	Forcemain, 62mm (GIS minus catalogued length of 75mm forcemain from 101-15273-02)	156 m	2006	80	68	\$400	\$62,515	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing. Assess/Inspect forcemain for	Included above 5-10 Year
18	802 2372 Coopers Ha		DPERS HAWK RISE	GIS	S FM		Forcemain, 100mm (includes 5m unknown diameter)	265 m	2006	80	68	\$450	\$119,222	1 3 4	deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
19 19	802         2372 Coopers Ha           802         2372 Coopers Ha           802         2372 Coopers Ha		IDY ROAD IDY ROAD	GIS GIS	S         SS           S         SS	S         85         S-SS-S-85           S         86         S-SS-S-86	Sewermain, 150mm (GIS minus catalogued length from 101-15273-01)Sewermain, 200mm (GIS minus catalogued length from 101-15273-01)	19 m 0 m	2006 2006	80 80	68 68	\$500 \$550	\$9,269 \$17	1     2     5       1     2     5		10+ Year       10+ Year
20	802 2372 Coopers Ha	awk Rise HUCK	CKLEBERRY ROAD	GIS	S FM		Forcemain, 75mm (GIS minus catalogued length from 101-15273-02)	100 m	2006	80	68	\$425	\$42,692	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
21	802 2372 Coopers Ha		L BAY PLACE	GIS		PP         88         S-FM-PP-88	Forcemain, 50mm (GIS minus catalogued length from 23019 01 A2)	17 m	2006	80	68	\$400	\$6,843	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
21	802 2372 Coopers Ha		L BAY PLACE	GIS	S SS S FM	S         89         S-SS-S-89           PP         90         S-FM-PP-90	Sewermain, 200mm         Forcemain, 75mm (GIS minus catalogued length from 101-15273-02)	88 m 223 m	2006	80 80 80	68 68	\$550 \$425	\$48,295 \$94,669 \$94,669	1 2 5 1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations	10+ Year       Included above       5-10 Year
												4.00			timing/phasing.	
23	802         2372 Coopers Ha           802         2372 Coopers Ha           802         2372 Coopers Ha		DWICK ROAD	GIS	S 55 S FM	S         91         S-SS-S-91           PP         92         S-FM-PP-92	Sewermain, 50mm (GIS minus catalogued length from 28367 01 D1) Forcemain, 75mm (includes 44m of unknown diameter) (GIS minus catalogued length from 101-15	5273-02) 103 m	2006	80	68	\$400 \$425	\$43,960	1 2 5 1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
24	802 2372 Coopers Ha	awk Rise ROZO	ON ROAD	GIS	S FM	PP         93         S-FM-PP-93	Forcemain, 50mm (GIS minus catalogued length from 28367 01 D1)	13 m	2006	80	68	\$400	\$5,255	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
24	802 2372 Coopers Ha	awk Rise ROZO	ON ROAD	GIS		PP 94 S-FM-PP-94	Forcemain, 62mm	174 m	2006	80	68	\$400	\$69,492	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing. Assess/Inspect forcemain for	Included above 5-10 Year
24	802 2372 Coopers Ha	awk Rise ROZO	ON ROAD	GIS	S FM		Forcemain, 100mm	189 m	2006	80	68	\$450	\$85,064	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
24	802 2372 Coopers Ha		ON ROAD	GIS	S SS S cc	S         96         S-SS-S-96           S         97         S-SS-S-97	Sewermain, 50mm Sewermain, 200mm (includes 23m unknown diameter)	94 m 404 m	2006	80	68 68	\$400 \$550	\$37,674 \$222,254			10+ Year
25	· · ·		GSTER ROAD	GIS	S SS		Sewermain, 200mm (GIS minus catalogued length from 23019 01 A2)	0 m	2006	80	68	\$550	\$0			10+Year
26	802 2372 Coopers Ha		TINEL DRIVE	GIS	S FM		Forcemain, 62mm	76 m	2006	80	68	\$400	\$30,255	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
26	802 2372 Coopers Ha	awk Rise SENT	TINEL DRIVE	GIS		PP 100 S-FM-PP-100	Forcemain, 75mm	339 m	2006	80	68	\$425	\$143,874	1 3 4	timing/phasing.Assess/Inspect forcemain for deterioration to determine replacementOperations timing/phasing.	Included above 5-10 Year
26	802 2372 Coopers Ha	awk Rise SENT	TINEL DRIVE	GIS	S FM	PP 101 S-FM-PP-101	Forcemain, 100mm (GIS minus catalogued length from 22375.01.A1)	395 m	2006	80	68	\$450	\$177,747	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
26	802 2372 Coopers Ha	awk Rise SENT	TINEL DRIVE	GIS	S SS	S 102 S-SS-S-102	Sewermain, 200mm (GIS minus catalogued length from 22375.01.A1)	110 m	2006	80	68	\$550	\$60,573	1 2 5		10+ Year
27	802 2372 Coopers Ha	awk Rise TERCI	CEL COURT	GIS	S FM	PP 103 S-FM-PP-103	Forcemain, 50mm (GIS minus catalogued length from 22375.01.A2)	7 m	2006	80	68	\$400	\$2,643	1 3 4	Assess/Inspect forcemain for deterioration to determine replacement Operations timing/phasing. Assess/Inspect forcemain for	Included above 5-10 Year
27	802 2372 Coopers Ha	awk Rise TERCI	CEL COURT	GIS	S FM	PP 104 S-FM-PP-104	Forcemain, 100mm (includes 49m unknown material)	177 m	2006	80	68	\$450	\$79,445	1 3 4	deterioration to determine replacement Operations timing/phasing.	Included above 5-10 Year
28 28	802 2372 Coopers Ha		re system re system	GIS GIS	S SS S SS	SV         105         S-SS-SV-105           MH         106         S-SS-MH-106           CO         107         S-SS-CO-107	Sewer Service Connections, (GIS minus catalogued number from record drawings) Sewer manholes, (minus catalogued number from record drawings)	114 ea 13 ea	2006 2006	60 40		\$3,000 \$8,000	\$342,000 \$104,000	1 2 5 1 2 5		10+ Year 10+ Year
28	802 2372 Coopers Ha	awk Rise Entire	re system	GIS		CO         107         S-SS-CO-107           DF         108         S-STP-DF-108	Sewer Cleanouts, (minus catalogued number from record drawings)       Disposal field building	37 ea	2006	60	48	\$2,000	\$74,000 \$600,000		Assess/Inspection disposal field for deterioration to determine replacement Operations	10+ Year
28	802 2372 Coopers Ha		re system		ς ςτρ	STP 109 S-STP-STP-109	Disposal field building Inspection port structure/building	4 ea	2006	40 	20	ېد. ډ.	tbd		deterioration to determine replacement Operations timing/phasing.	\$10,000 5-10 Year
28	802 2372 Coopers Ha		re system	GIS	S LS	BLD         110         S-LS-BLD-110	Pump station (minus catalogued number from record drawings)	0 ea	2006	40	28	n/a	n/a	1 1 5		10+Year



802 (1)



**<sup>802 (2)</sup>** 1 of 29



802 (3)



**802 (4)** 2 of 29



802 (5)



**802 (6)** 3 of 29



802 (7)



**802 (8)** 4 of 29



802 (9)



**802 (10)** 5 of 29



802 (11)



**802 (12)** 6 of 29



802 (13)



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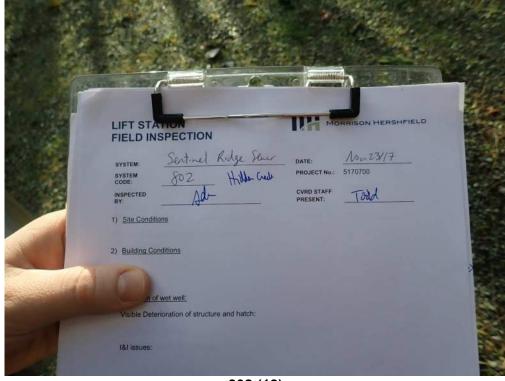


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**802 (18)** 9 of 29



802 (19)



**802 (20)** 10 of 29



802 (21)



**802 (22)** 11 of 29



802 (23)



**802 (24)** 12 of 29



802 (25)



**802 (26)** 13 of 29



802 (27)



**802 (28)** 14 of 29



802 (29)



**802 (30)** 15 of 29



802 (31)



**802 (32)** 16 of 29



802 (33)



**802 (34)** 17 of 29



802 (35)



**802 (36)** 18 of 29



802 (37)



**802 (38)** 19 of 29



802 (39)



**802 (40)** 20 of 29



802 (41)



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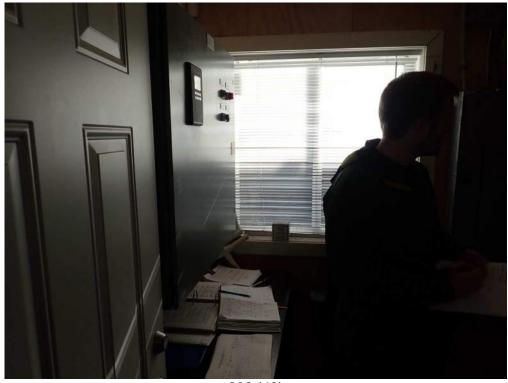
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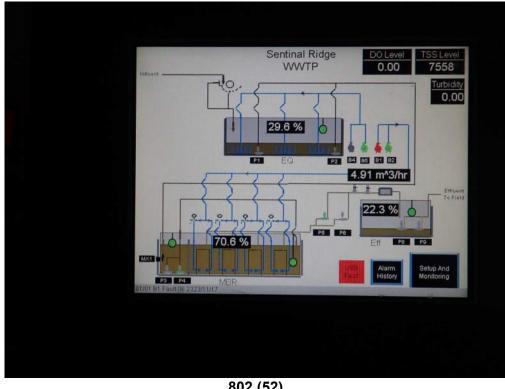


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**802 (54)** 27 of 29



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**802 (56)** 28 of 29



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#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Sentinel Ridge Sewer - Lift Station 1 - Functional Code 802

	đ			со	OMPONENT			г						LIFECYCLE DA	TA	RECOMMEND	DATION			If recommended					OPIN	ON OF PRO	BABLE CO	DST		
BLDG Name BLDG Type	Function Code Level 1 Major Grc Elements	Level 2 Group Elements	Level 3 Individu. Elements	ID	Location / Type		Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	phased over	work not complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit Subtotal Repair or	Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations		The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	5	5	2012	21-Nov-17	МН	6	50	44	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$20	SF \$1,0	10 0	0%	5%	5%	\$2,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 A Substructure	A10 Foundations	A1030 Slab on Grade	A103001 Standard Slat on Grade	b Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5		2012			6	50	44	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$10	SF \$50	) (	0%	5%	5%	\$1,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5		2012			6	50	44	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$40	SF \$2,0	10 0	0%	5%	5%	\$3,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 B Shell	CB20 Exterior Enclosure	B2010 Exterior Walls	Enclosure	Exterior Walls/ Cementitious Siding		The cladding consists of stained wood siding.	4		2012			6	12	6	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	200		SF \$1,6		0%	15%	5%	\$2,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 B Shell	CB20 Exterior Enclosure	B2010 Exterior Walls	8 B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1	The cladding consists of stained wood siding.	5	5	2012	21-Nov-17	МН	6	50	44	If maintaned the wood siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	200	\$35	SF \$7,0	ю с	0%	5%	5%	\$8,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 B Shell	CB20 Exterior Enclosure	B2010 Exterior Walls	B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5	5	2012	21-Nov-17	МН	6	50	43	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	24	\$20	SF \$48	) (	0%	10%	5%	\$1,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	5	5	2012	21-Nov-17	МН	6	30	24	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$1,500	EA \$3,0	10 0	0%	5%	5%	\$4,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 B Shell	D30 Roofing	B3010 Roof Coverings	B301002 Low Sloped Roof Coverings	Roof/2-Ply SBS membrane	1	The roof is standing seam metal roof. A snow guard is present over the doors. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5	5	2012	21-Nov-17	МН	6	25	19	Replace the roofing membrane and perimeter flashings at the end of their service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	50	\$30	SF \$1,5	10 C	0%	5%	5%	\$2,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 C Interiors	C30 Interior Finishes	C3010 Wall Finishes	C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior plywood walls are not painted painted, the gypsum sheathing is painted.	5	5	2012	21-Nov-17	МН	6	20	14	Repaint interiors as required. Cost assumed that walls will be painted. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS \$50		0%	0%	5%	\$1,000
Sentinel Ridge Sewer Sewer - Lift Station 1 Building	802 C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	5	5	2012	21-Nov-17	МН	6	20	13	Repalce lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$20	) (	0%	0%	5%	\$1,000

Cowichan Valley Regional District
Facility Condition Assessment and Capital Plan
Sentinel Ridge Sewer - Lift Station 1 - Functional Code 802

		\$	ents.	_	со	OMPONENT	CONDITION ASSESSMEN	т				LIFECYCLE D	ATA	RECOMMEN	DATION			If recommended	1				OPINION (	OF PROBABL	.E COST		10-YEAR CAPITAL PLAN
ameN DOJ8	BLDG Type	Function Code Level 1 Major Gro	Level 2 Group Elemi	Level 3 Individua Elements	di	Location / Type	Photo Description & History	Condition Performance	Yr New or Last Major Action	Assessment Date Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?		this system lead	Can the current condition adversely affect the buildings security of safety i	Quantity	Unit Rate	Subtotal Subtotal Replacement Cost	Consult.	Contin- gency	5% Tax	Eggs         2018         2019         2020         2021         2022         2023         2024         2025         2026         2027           50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50
Sentinel Ridge Sewer - Lift Statio	Sewer 8 n 1 Building	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	<ol> <li>The foundation is comprised of cash-n-place concrete footings with concrete foundation walls. The foundation is concreted from review, with the exception of some above-grade foundation wall on some elevations.</li> </ol>	5 5	2012	21-Nov-17 MH	6	50		The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicabl	e Not Applicable	Yes	Yes	Yes	No	50	\$20 S	F \$1,000	0%	5%	5%	\$2,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 n 1 Building	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Slab on Grade	b Interior of Building At-Grade, Slab-on-Grade	1 The floor is concrete slab-on-grade (polished concrete throughout), tolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5 5	2012	21-Nov-17 MH	6	50	44 1 r b	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicabl	e Not Applicable	Yes	Yes	Yes	No	50	\$10 S	F \$500	0%	5%	5%	\$1,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	802 B Shell	B10 Superstructure	B10 Superstructur	B10 Superstructure	Interior of Building/ General Superstructure	<ol> <li>The superstructure is comprised of wood framing on all four walls and root russes, supported on a cast-in-place concrete foundation.</li> <li>No settlement or other evidence of structural distress was observed reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.</li> </ol>	5 5	2012	21-Nov-17 MH	6	50	44 l a t a	Interior protected structural components are expected to last the life of the utilding. No major capital expenditures are expected to be required.	Not Applicabl	e Not Applicable	Yes	Yes	Yes	No	50	\$40 S	F \$2,000	0%	5%	5%	\$3,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	802 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls 8201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1 The cladding consists of stained wood siding.	4 4	2012	21-Nov-17 MH	6	12	4	Repaint siding and trim. At the time of painting, replace sealant oints and wood trim as required.	Repair Allowan	ce 3 - Future Renewal	Yes	Yes	No	No	200	\$8 S	F \$1,600	0%	15%	5%	\$2,000 \$2,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	802 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1 The cludding consists of stained wood skiling.	5 5	2012	21-Nov-17 MH	6	50	r	If maintaned the wood siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	: 3 - Future Renewal	Yes	Yes	No	No	200	\$35 S	F \$7,000	0%	5%	5%	58,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 h 1 Building	802 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	5 5	2012	21-Nov-17 MH	6	50	L.	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	24	\$20 S	F \$480	0%	10%	5%	\$1,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	802 B Shell	B20 Enclosure		ors 8203001 Solid Doors		1 One painted metal door is present on the building.			21-Nov-17 MH		30		Replace door at the end of its service life.		Renewal	Yes	Yes	No	No			A \$3,000	0%			\$4,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	B Shell	D30 Roofing	B3010 Roof Coverings	B301002 Low Sloped Roof Coverings		<ol> <li>The root is standing seam netal root. A snow guard is present over the doors.</li> <li>The root drains via aluminum gutters to rain water leaders that drain into below grade piping.</li> </ol>			21-Nov-17 MH		25	F S C	Replace the roofing membrane and perimeter flashings at the end of their service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	Renewal	No	Yes	No	No		\$30 S		0%			\$2,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	002 C Interiors	C30 Interior Finishes	s C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2 The interior physical walks are not painted painted, the gypsum sheathing is painted.	5 5	2012	21-Nov-17 MH	6	20	14 F 8 1	Repaint interiors as required. Cost assumed that walls will be painted. Note: a long service life has been included to reflect to building usage.	Repair Allowan	ce 3 - Future Renewal	Yes	Yes	No	No	1	\$500 L	S \$500	0%	0%	5%	\$1,000
Sentinel Ridge Sewer - Lift Statio	Sewer 8 1 Building	802 C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	5 DS02002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	5 5	2012	21-Nov-17 MH	6	20	13 6	Repaice lights at the end of their service ife.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 L	S \$200	0%	0%	5%	51,000

566



Photo 1



Photo 2

## 567

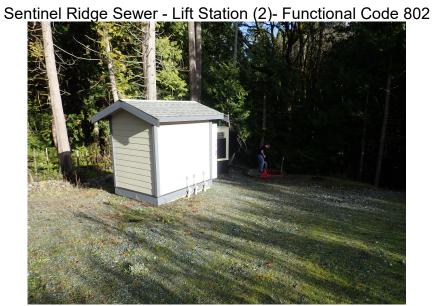
Cowichan Valley Regional District

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Sentinel Ridge Sewer - Lift Station 2 - Functional Code 802

	dno		a	cc	MPONENT		CONDITION ASSESSME	INT						LIFECYCLE DA	ГА	RECOMMEN	DATION			If recommended work not		Can the current				OPINION OF	PROBABL	E COST		
BLDG Name BLDG Type Function Code	Level 1 Major Gn Elements	Level 2 Group Elements	Level 3 Individu Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	complete can the rate of	Will a failure in this system lead to a loss of use of the facility ?	condition	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	A Substructu	e A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundati wall on some elevations.		5	2010	21-Nov-17	МН	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	70	\$20	SF	\$1,400	0%	5%	5%	\$2,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	A Substructu	e A10 Foundations	A1030 Slab on Gra	ade A103001 Standard Sla on Grade	b Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5	2010	21-Nov-17	МН	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	70	\$10	SF	\$700	0%	5%	5%	\$1,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	B Shell	B10 Superstructur	e B10 Superstructur	e 810 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of lon term leakage that would allude to concreated structural damage		5	2010	21-Nov-17	МН	8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	70	\$40	SF	\$2,800	0%	5%	5%	\$4,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	alls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	s 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4	2010	21-Nov-17	МН	8	12	5	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	200	\$8	SF	\$1,600	0%	15%	5%	\$2,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	alls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding		Painted cementitious siding and wood trim are present on the exterior walls.	5			21-Nov-17		8	50	42	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	200	\$35	SF	\$7,000	0%	5%	5%	\$8,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	alls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5	5	2010	21-Nov-17	МН	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	20	\$20	SF	\$400	0%	10%	5%	\$1,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors		1	Two painted metal doors are present on the building.	5			21-Nov-17		8	30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA	\$500	0%	5%	5%	\$1,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is sloped assembly which has been waterproofed with asphalt shingles.	1 5	5	2010	21-Nov-17	МН	8	25	17	Replace the asphat shingle assembly at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	80	\$30	SF	\$2,400	0%	5%	5%	\$3,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	C Interiors	C30 Interior Finish	es C3010 Wall Finishe	es C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior gypsum and plywood walls and ceilings are painte	d. 5	5	2010	21-Nov-17	МН	8	20	12	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS	\$500	0%	0%	5%	\$1,000
Sentinel Ridge Sewer 802 Sewer - Lift Station 2 Building	C Interiors	D50 Electrical	D5020 Lighting an Branch Wiring	d Exterior Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	5	5	2010	21-Nov-17	MH	8	20	13	Repaice lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District
Facility Condition Assessment and Capital Plan
Sentinel Ridge Sewer - Lift Station 2 - Functional Code 802

		ę		ent s	-	C	OMPONENT		CONDITION ASSESSME	NT					LIFECYCLE DA	ТА	RECOMMENDA	TION			If recommended	1				OPINIO	N OF PROB	ABLE COST			10-YEAR CAPITAL PLAN
BLDG Name	BLDG Type	Function Code Level 1 Major Gro	Elements	Level 2 Group Elem	Level 3 Individu: Elements	ID	Location / Type		Description & History	Candition	Performance Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	rate of	this system lead	adversely affect	antity	Unit Rate	Unit Subtotal Repair or Renlar ement Cret	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars	2018         2019         2020         2021         2022         2023         2024         2025         2036           50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50         50
Sentinel Ridge Sewer - Lift Station	Sewer 803 2 Building	2 A Substruc	cture A10 Fou	ndations .	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundation	is 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walk. The foundation is concealed fr review, with the exception of some above-grade foundation wa on some elevations.	m	5 2010	21-Nov-1	7 MH	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	70	\$20	SF \$1,400	0%	5%	5%	\$2,000	
Sentinel Ridge Sewer - Lift Station						on Grade	lab Interior of Building At-Gran Slab-on-Grade		The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5			7 MH	8	50	42	remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Applicable		Yes	Yes	No	70	\$10			5%			
Sentinel Ridge Sewer - Lift Station	Sewer 802 2 Building	2 B Shell				B10 Superstructure	Superstructure		The superstructure is comprised of wood framing on all four wa and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was bosivered or reported. There was no evidence or reports of lon term leakage that would allude to concealed structural damage.	3-					50	42	are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable		Yes	Yes	No	70		SF \$2,800			5%		
Sentinel Ridge Sewer - Lift Station	Sewer 803 2 Building	2 B Shell	CB20 Ex Enclosu		B2010 Exterior Walls	8 B201001 Exterior Enclosure	Exterior Walls/ Cementitio Siding	us 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4 2010	21-Nov-1	7 MH	8	12	5	Repaint siding and trim. R At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	200	\$8	SF \$1,600	0%	5 159	6 5%	\$2,000	52,000 c
Sentinel Ridge Sewer - Lift Station	Sewer 802 2 Building	2 B Shell	CB20 Ex Enclosu		B2010 Exterior Walls	8 B201001 Exterior Enclosure	Exterior Walls/ Cementitio Siding	us 1	Painted comentitious siding and wood trim are present on the exterior walls.	5			7 MH	8	50	42	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal		Yes	No	No	200	\$35	SF \$7,000	0%	; 5%	5%	\$8,000	
Sentinel Ridge Sewer - Lift Station	Sewer 803 2 Building	2 B Shell	CB20 Ex Enclosu		B2010 Exterior Walls	B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5	5 2010	21-Nov-1	7 MH	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	20	\$20	SF \$400	0%	5 109	6 5%	\$1,000	
Sentinel Ridge Sewer - Lift Station	Sewer 803 2 Building	2 B Shell	B20 Enc			s B203001 Solid Door		1	Two painted metal doors are present on the building.	5		21-Nov-1		8	30	22	life.	Replacement	Renewal	Yes	Yes	No	No	1	\$500			5%	5%		
Sentinel Ridge Sewer - Lift Station	Sewer 803 2 Building	2 B Shell	D30 Roc	fing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assemb	ly 1	The roof is sloped assembly which has been waterproofed with asphalt shingles.	5	5 2010	21-Nov-1	7 MH	8	25	17	Replace the asphat shingle assembly at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	80	\$30	SF \$2,400	0%	; 5%	5%	\$3,000	
Sentinel Ridge Sewer - Lift Station	Sewer 803	2 C Interiors	s C30 Inte	rior Finishes	C3010 Wall Finishes	C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior gypsum and phywood walls and ceilings are painted	. 5	5 2010	21-Nov-1	7 MH	8	20	12	Repaint Interiors as required. R Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS \$500	0%	i 0%	5%	\$1,000	
Sentinel Ridge Sewer - Lift Station	Sewer 802	2 C Interiors	s DSO Eler	trical	D5020 Lighting and Branch Wiring	Exterior Lighting Equipment	Exterior Lighting Equipmen	ıt	An exterior light is present on the building near the entrance.	5	5 2010	21-Nov-1	7 MH	8	20	13	Repaice lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$200	0%	6 0%	5%	\$1,000	



Cowichan Valley Regional District

Photo 1



Photo 2

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Sentinel Ridge Sewer - Sewer Treatment Plant - Functional Code 802

			dno		<u>.</u>	cor	<b>MPONENT</b>		CONDITION ASSESSMENT						LIFECYCLE DAT	A	RECOMMEND	DATION			If recommended		6			OPINIO	N OF PROBAB	LE COST		
BLDG Name	BLDG Type	Function Code	Level 1 Major Gr Elements	Level 2 Group Elements	Level 3 Individu Elements	ID	Location / Type	Photo	Description & History	Condition	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead to a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit Subtotal Repair or Replacement	Cost Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	5 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walk. The foundation is concaled from review, with the exception of some above-grade foundation wall on some elevations.	5 5	2013	21-Nov-17	МН	5	50	45	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	800	\$30	SF \$24,000	0%	5%	5%	\$27,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5 5	2013	21-Nov-17	МН	5	50	45	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	800	\$30	5F \$24,000	0%	5%	5%	\$27,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2013	21-Nov-17	МН	5	10	5	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500	LS \$500	0%	0%	5%	\$1,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2013	21-Nov-17	МН	5	50	45	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No							
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ Genera Superstructure	al 1	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5 5	2013	21-Nov-17	МН	5	50	45	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	800	\$30 !	SF \$24,000	0%	5%	5%	\$27,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	s B201001 Exterior Enclosure	Exterior Walls/ Cementition Siding	us 1	Painted cementitious siding and wood trim are present on the exterior walls.	4 4	2013	21-Nov-17	МН	5	12	7	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	800	\$8 !	5F \$6,400	0%	15%	5%	\$8,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	s B201001 Exterior Enclosure	Exterior Walls/ Cementition Siding	us 1	Painted cementitious siding and wood trim are present on the exterior walls.	5 5	2013	21-Nov-17	MH	5	50	45	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	800	\$35	5F \$28,000	0%	5%	5%	\$31,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	s B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5 5	2013	21-Nov-17	МН	5	50	43	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$20	5F \$2,000	0%	10%	5%	\$3,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	CB20 Exterior Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/Windows	1	Two vinyl framed windows are present on the building.	5 5	2013	21-Nov-17	МН	5	25	20	Replace windows at the end of their service lifes.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$200 8	EA \$400	0%	10%	5%	\$1,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	5 5		21-Nov-17		5	30	25	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1		EA \$1,500	0%	5%	5%	\$2,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	B20 Enclosure	E2030 Exterior Doors	B203004 Overhead and Roll-up Doors	Exterior Walls/ Door	1	One metal overhead door is present.	5 5	2013	21-Nov-17	МН	5	20	15	Replace doors at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 H	EA \$1,500	0%	5%	5%	\$2,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	y 1	The roof is sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5 5	2013	21-Nov-17	MH	5	25	20	Replace the roof assembly at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	850	\$30	SF \$25,500	0%	5%	5%	\$29,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	y 1	The roof is sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5 5	2013	21-Nov-17	мн	5	25	20	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	60	\$10	5F \$600	0%	10%	5%	\$1,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	C Interiors	C30 Interior Finishes	C3010 Wall Finishes	C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior gypsum and plywood walls and ceilings are painted.	5 5	2013	21-Nov-17	MH	5	20	15	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	LS \$1,500	0%	0%	5%	\$2,000
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer Building	802	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipmen	it	An exterior light is present on the building near the entrance.	5 5	2013	21-Nov-17	MH	5	20	15	Repalce lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District	
Facility Condition Assessment and Capital Plan	

Facility Condition Assessment and Capital Plan Sentinel Ridge Sewer - Sewer Treatment Plant - Functional Code 802

		<u>e</u>	nts		со	MPONENT	CONDITION ASSESSMEN	т			LIFEC	YCLE DATA	RECO	MMENDATION			If recommended	1				OPINION O	F PROBABLE CO	ST		10-YEAR	CAPITAL PLA	N					
Aa me	Type	n Code Ijor Grou ents	ip Eleme	idivid ual ents		- ad A	CONDITION ASSESSMEN		Date	By					~	Can this work be	work not complete can the	Will a failure in this system lead to a loss of use of the facility ?	Can the current condition	~		t Cost		ŝ	£	2018	2019	2020 2	021 2022	2023	2024	2025 202	6 2027
BUDG	BUDG	Functio Level 1 Ma Elem	Level 2 Grou	Level 3 Ind Elemer		Location / 1	Photo Description & History	Conditio Performan Yr New or   Major Act	Assessment	As sessed	Age in 2018 Typical	Ute Cycle or Action Interval Est. Time Remaining to EOL	Recommendation	Type	Priority	multiple years ?	deterioration be expected to increase ?	to a loss of use of the facility ?	condition adversely affect the buildings security of safety	Quantit	Unit Rat Unit	Subtota Repair o Replacemen	Consult	S S S Contin Contin Tax	Tot al in 2017 Dollars	\$0	\$0	\$0 :	\$0 \$1,000	\$0	\$8,000	\$0 \$0	\$0
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1 The foundation is comprised of east-re-place concrete footings with concrete foundation walk. The foundation is conceiled from review, with the exception of some above-grade foundation wall on some elevations.	5 5 2013	21-Nov-17	MH	5 5	50 45	The foundations are expected to serviceable for the life of the buil capital expenses associated with are expected.		Not Applicable	Yes	Yes	Yes	No	800	\$30 SF	\$24,000	0%	5% 5%	\$27,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 A Substructure	A10 Foundations	A1030 Slab on Gr	ade A103001 Standard Slab on Grade	b Interior of Building At-Grade/ Slab-on-Grade	1 The floor is concrete slab-on-grade (polished concrete throughout), loaled hairine cracking was observed. No evidence of major settlement or heaving was reported or observed.	5 5 2013	21-Nov-17	MH	5 5	50 45	The concrete slab-on-grade is exp remain serviceable for the life of building, with isolated repairs, if n No capital expenses associated w item are expected.	the needed.	Not Applicable	Yes	Yes	Yes	No	800	\$30 SF	\$24,000	0%	5% 5%	\$27,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 A Substructure	A10 Foundations	A1030 Slab on Gr.	ade A103005 Foundation Drainage	Underground/ Perimeter Drains	<ol> <li>Perimeter drain pipes are assumed to be installed at the footing levet. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.</li> </ol>	5 5 2013	21-Nov-17	7 MH	5 1	10 5	Periodic camera inspection and is repairs as required.		Not Applicable	No	N/A	No	N/A	1	\$500 LS	\$500	0%	0% 5%	\$1,000				\$1,000	)			
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains	1 Perimeter drain pipes are assumed to be installed at the footing level. No siscus related to bundlism drainage ware noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5 2013	21-Nov-17	r MH	5 5	50 45	The foundation drainage is expec- last the life of the building. No mi capital expenditures are expected required. Note: this should be updated with results of the foundation drainag recommended in A103006 Found Drainage (above).	ajor I to be h the e review Jation	3 - Future Renewal	N/A	N/A	No	No														
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	B10 Superstructure	B10 Superstructu	re 810 Superstructure	Interior of Building/ General Superstructure	<ol> <li>The supertructure is comprised of wood framing on all four walls and root ruses, supported on a cat-im-place concrete foundation.</li> <li>No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concelled structural damage.</li> </ol>	5 5 2013	21-Nov-17	MH	5 5	50 45	Interior protected structural com are expected to last the life of th building. No major capital expen- are expected to be required.	÷	Not Applicable	Yes	Yes	Yes	No	800	\$30 SF	\$24,000	0%	5% 5%	\$27,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	CB20 Exterior Enclosure	B2010 Exterior W	alls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted cementitious siding and wood trim are present on the exterior walts.</li> </ol>	4 4 2013	21-Nov-17	7 MH	5 1	12 7	Repaint siding and trim. At the time of painting, replace se joints and wood trim as required.	Repair Allowand	e 3 - Future Renewal	Yes	Yes	No	No	800	\$8 SF	\$6,400	0%	15% 5%	\$8,000						\$8,000		
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	CB20 Exterior Enclosure	82010 Exterior W	alls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	Painted cementitious siding and wood trim are present on the exterior walls.	5 5 2013	21-Nov-17	MH	5 5	50 45	The cementitious siding is expect the life of the building. Note: isolated sealant and wood I replacement should be complete of the ongoing painting.	trim	3 - Future Renewal	Yes	Yes	No	No	800	\$35 SF	\$28,000	0%	5% 5%	\$31,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	CB20 Exterior Enclosure	B2010 Exterior W	alls B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	5 5 2013			5 5	50 43	The perforated metal soffit is exp last the life of the building. No c expenses associated with this iter expected.	apital n are	3 - Future Renewal	Yes	Yes	No	No	100	\$20 SF	\$2,000	0%	10% 5%	\$3,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	CB20 Exterior Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/Windows	<ol> <li>Two vinyl framed windows are present on the building.</li> </ol>	5 5 2013	21-Nov-17	MH	5 2	25 20	Replace windows at the end of th service lifes.	eir Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$200 EA	\$400	0%	10% 5%	\$1,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	B20 Enclosure	E2030 Exterior Do	ors B203001 Solid Doors	Exterior Walls/ Door	1 One painted metal door is present on the building.	5 5 2013	21-Nov-17	MH	5 3	30 25	Replace door at the end of its ser	vice life. Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 EA	\$1,500	0%	5% 5%	\$2,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	B20 Enclosure		ors B203004 Overhead and Roll-up Doors		1 One metal overhead door is present.	5 5 2013	21-Nov-17		5 2	20 15	Replace doors at the end of its se		3 - Future Renewal	Yes	Yes	No	No		\$1,500 EA	\$1,500	0%	5% 5%									
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is sloped assembly with asphalt shingles.</li> <li>The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.</li> </ol>	5 5 2013	21-Nov-17		5 2	25 20	Replace the roof assembly at the its service life. Ongoing maintenance of the root include review of all exposed fast and resealing of penetrations.	should eners	3 - Future Renewal	No	Yes	No	No	850	\$30 SF	\$25,500	0%	5% 5%									
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is sloped assembly with asphalt shingles.</li> <li>The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.</li> </ol>	5 5 2013	21-Nov-17	MH	5 2	25 20	Replace gutters at the end of the life.	r service Replacement	3 - Future Renewal	Yes	Yes	No	No	60	\$10 SF	\$600	0%	10% 5%	\$1,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 C Interiors	C30 Interior Finishe	s C3010 Wall Finish	es C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2 The interior gypsum and plywood walls and ceilings are painted.	5 5 2013	21-Nov-17	MH	5 2	20 15	Repaint interiors as required. Note: a long service life has been to reflect to building usage.	Repair Allowand	e 3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 LS	\$1,500	0%	0% 5%	\$2,000								
Sentinel Ridge Sewer - Sewer Treatment Plant	Sewer 8 Building	02 C Interiors	D50 Electrical	D5020 Lighting an Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	5 5 2013	21-Nov-17	MH	5 2	20 15	Repaice lights at the end of their : life.	service Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 LS	\$200	0%	0% 5%	\$1,000								

Cowichan Valley Regional District

Sentinel Ridge Sewer - Sewer Treatment Building (2)- Functional Code 802



Photo 1



Photo 2



## 803 - Twin Cedars Sewer

Infrastructure Condition Assessment and Capital Plan 1413 Hutchinson Rd, Cobble Hill, BC

PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$6,285,197	
Number of Users	74	
Replacement Cost Per User	\$84,935	
Annual Replacement Cost (40 Years)	\$65,866	per year
Annual Replacement Cost (80 Years)	\$77,595	per year
10 Year Capital Plan Total	\$150,000	
10 Year Operations and Maintenance Plan Total	\$120,000	

## **PROPERTY DESCRIPTION**

The system was originally constructed in 2008 and includes the phases outlined in the table below.

Development	Year Installed	Source
Sewage Treatment Plant	2008	CVRD Input
Hutchinson Road Lift Station and Twin Cedars	2008	Record Drawing (011497-20)
Rapid Infiltration Basin	2011	CVRD Input
Fisher Road, Heigh Road and Watson Road	2013	Record Drawing (2240-2)
Pine St, Princess Ave, Fairfield Rd, Garland Ave	2013	Record Drawing (2240-3)
Fairfield Rd, Holland Ave and Garland Ave	2013	Record Drawing (2240-4)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

## CONTACT INFORMATION

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# 803 - Twin Cedars Sewer

## Infrastructure Condition Assessment and Capital Plan 1413 Hutchinson Rd, Cobble Hill, BC

Date Prepared

July 18, 2018

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 2, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
July 3, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New



## 803 - Twin Cedars Sewer

Infrastructure Condition Assessment and Capital Plan 1413 Hutchinson Rd, Cobble Hill, BC

Date Prepared July 18, 2018

# **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

# Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical (0 - 1 Year)	1						
	2						\$0
(0 - 1 (ear)	3						
	4						
Important (1 - 2 Year)	5						\$0
	6						
Short Term	7						
(2 - 5 Year)	8						\$0
(2 - 5 Tear)	9						
	10	1	S-STP-BLW-22	Capital Upgrade/New	Upgrade to more efficient and quieter blowers in STP.	\$150,000	
Medium Term (5 - 10 Year)	11						\$150,000
	12						
						Total	\$150,000

# Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total	
Critical (0 - 1 Year)	1							
	2						\$0	
	3							
Important	4							
(1 - 2 Year)	5						\$0	
(1 2 1001)	6							
	7	3	Operations	Operations	Inspect/assess lift station for deterioration to determine replacement timing/phasing.	\$10,000		
Short Term	8							
(2 - 5 Year)	9						\$10,000	
	10							
	11 12							
Medium Term (5 - 10 Year)	13	1	ALL	Operations	Inspect/assess equalization and anoxic tanks, disgestor and membranes, UV reactors, process piping, pumps, chlorine system at STP for deterioration to determine any rehabilitation/replacement requirements. Review options to address odour complaints at STP and to improve controls of STP to improve system efficiency. Review implications on STP of expanding service area to include Cobble Hill.	\$70,000	\$110,000	
	14	2	S-STP-DF-27	Operations	Inspect/assess Rapid Infiltration system for deterioration to determine any rehabilitation/replacement requirements.	\$5,000	\$110,000	
	15	5 4 to 13 and 25 ALL Operation		Operations	Assess/Inspect forcemains and air release valve chambers for deterioration to determine replacement timing/phasing.	\$35,000		
	16							
	17							
						Total	\$120,000	

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner: System:	Owner:Cowichan Valley Regional District (CVRD)Infrastructure Condition AssessmentSystem:803Twin Cedars Sewer																						
Civic Address:1413 Hutchinson rdPotential Service Con132																							
Geographic Location: Customers:	East of Cobble Hill Village Parcels:	76												Total Replacement Value	\$6,285,197								
	Users:	74									Curren	nt Year	2018	Value per user	\$84,935								
Asset ID		Location			Asset Code				Ass	set Inventory								Condition Assessment			Recommendations / Action Items		10 Year Capital Plan
	Function Code	Address Location	DWG Ref N	1ajor Minor Spec	ID Asset Code	Photo	Description	Make Model	Material Quantity Qu	uantity Unit Yea	ar Installed Year Renewed Service Life	e Expectancy	Est. Remaining Service Life	Unit Price	Replacement Value of Asset	Physical Condition	Level of Service Conc	dition Demand Condition	Probablity of Failure	Severity of Failure	Condition Description	Type of Work	Budget Estimate Timing Comment/Question to be resolved
														Refer to Twin Cedars Sewer				Excess capacity to accommodate a larger					Refer to Twin Cedars
1	803	1413 Hutchinson rd Sewage treatment plant (Hutchinson rd) Sit	te Visit / Photos	S STP STP	1 S-STP-STP-1	7 to 35	Sewage treatment plant building		1	ea	2008 4	40		System Building Condition		Good - fenced and gated	Meets standard	service area (100%					Sewer System Building Condition
														Assessment.				redundancy), some odour complaints					Assessment.
1	803	1413 Hutchinson rd Sewage treatment plant (Hutchinson rd) Sit	te Visit / Photos	S STP ET	2 S-STP-ET-2	10	Equalization tank		1	ea	2008 4	40	30	\$150,000	\$150,000	Good - some odour	Meets standard	Lots of capacity	2	2	4 Inspect/assess equalization and anoxic tanks, disgestor a	Operations	\$70,000 <b>5-10 Year</b>
1	803	1413 Hutchinson rd Sewage treatment plant (Hutchinson rd) Sit	te Visit / Photos	S STP AT	3 S-STP-AT-3	10	Anoxic tank		1	еа	2008 4	40	30	\$100,000	\$100,000	Good	Meets standard	Lots of capacity	2	2	4 Inspect/assess equalization and anoxic tanks at STP for d	Operations	Included above 5-10 Year
1	803	1413 Hutchinson rd Sewage treatment plant (Hutchinson rd) Sit	te Visit / Photos	S STP FTR	4 S-STP-FTR-4	13	Digestor c/w membrane bioreactors		4	LS	2008 4	40	30	\$150,000	\$300,000	Good - membranes are replaced every 10 years	Meets standard	Lots of capacity	2	2	4 Inspect/assess digestor and membranes at STP for deteri	Operations	Included above 5-10 Year
1	803	1413 Hutchinson rd Sewage treatment plant (Hutchinson rd) Sit	te Visit / Photos	S STP GEN	8 S-STP-GEN-8	12	Generator, 80 kW (STP Hutchinson rd)		1	еа	2008 4	40	30	\$100,000	\$100,000		Meets standard	Able to meet capacity, kicks	5 1	2	5		10+ Year
1	803	1413 Hutchinson rd     Sewage treatment plant (Hutchinson rd)     Sit	te Visit / Photos	S STP UV	9 S-STP-UV-9	19 to 22	UV filter unit	Trojan UV 3000 PTP	2	ea	2008 20	20	10	\$20,000	\$40,000	Good	Meets standard	on 2-3 times a year	2	2	4 Inspect/assess UV reactors at STP for deterioration to de	Operations	Included above 5-10 Year
1	803 803	1413 Hutchinson rdSewage treatment plant (Hutchinson rd)Sit1413 Hutchinson rdSewage treatment plant (Hutchinson rd)Sit	te Visit / Photos te Visit / Photos	S STP PP	11         S-STP-PP-11           1         12         S-STP-COM-12	19, 20, 22, 23,31 to 24, 26, 28, 29				LS LS	2008 44 2008 10	40	<u> </u>	\$100,000 \$20,000	\$100,000 \$20,000	Good Good	Meets standard Meets standard	System not very efficient	2	2 2	<ul> <li>Inspect/assess process piping in STP for deterioration to</li> <li>Review options to improve controls of STP to improve sy</li> </ul>	Operations Operations	Included above5-10 YearIncluded above5-10 Year
1	803		te Visit / Photos		2 13 S-STP-PMP-13	19, 20, 22, 23, 24, 31			8	ea	2008 20	20	10	\$5,000	\$40,000	Good - permeate and recycle		Able to meet capacity (with	2	2	4 Inspect/assess pumps in STP for deterioration to determ	Operations	Included above 5-10 Year
1	803		te Visit / Photos			31 to 33	Chlorine system c/w tank, analyzer			LS	2008 2	20	10	\$35,000	\$35,000	pumps Good	Meets standard	redundancy)	2	2	4 Inspect/assess chlorine system in STP for deterioration to		Included above 5-10 Year
1	803	1413 Hutchinson rd Sewage treatment plant (Hutchinson rd) Sit	te Visit / Photos	S STP BLW		20, 22	Blowers		5	ea	2008 20	20	10	\$30,000	\$150,000	Good - very loud (2 for EQ tank, 3 for reactor)	Meets standard	Able to meet capacity (with	2	2	4 Upgrade to more efficient and quieter blowers in STP.	Capital Upgrade/New	\$150,000 <b>5-10 Year</b>
2	803	1413 Hutchinson rd RIB (next to Hutchinson STP) Sit	te Visit / Photos	S STP DF	27 S-STP-DF-27	39 to 51	Rapid Infiltration Basin system (RIB) c/w process piping, val	ves		LS	2011 8	80	73	\$150,000	\$150,000	Good - 6 fields	Meets standard	Able to meet capacity	2	2	4 Inspect/assess Rapid Infiltration system for deterioration	Operations	\$5,000 5-10 Year
			011107.00	C 10 10	20 0101020	21.0					2000	10	20	6500.000	6500.000	Good - fenced and gated,				2		Quanting	
3	803		011497-20		28 S-LS-LS-28	2 to 6	Lift station (Hutchinson)			еа	2008 4	40	30	\$500,000	\$500,000	standby power from generator at STP	Meets standard	Able to meet capacity	2	3	3 Inspect/assess lift station for deterioration to determine	Operations	\$10,000 2-5 Year
3	803	1413 Hutchinson rdHutchinson rd lift station 3518 Twin cedars dr.1413 Hutchinson rdHutchinson rd lift station 3518 Twin cedars dr.	011497-20	S LS PMP		4	Pump, solids handling submersible pump, 3.73kW, 575/3/6		2	ea	2008 20 2008 4	20	10	\$8,000 \$60,000	\$16,000	Good	Meets standard Meets standard		2	3	<ul> <li>Inspect/assess lift station for deterioration to determine</li> <li>Inspect/assess lift station for deterioration to determine</li> </ul>	Operations	Included above 2-5 Year Included above 2-5 Year
3	803	1413 Hutchinson rdHutchinson rd lift station 3518 Twin cedars dr.Sit1413 Hutchinson rdHutchinson rd lift station 3518 Twin cedars dr.Sit	te Visit / Photos	S LS COM	30         3-L3-VC-30           1         31         S-LS-COM-31	3, 6	Valve chamber c/w process piping, valves, concrete chambe Communications (Hutchinson LS)			LS	2008 1	10	0	\$10,000	\$10,000	Good	Meets standard		2	3	3 Inspect/assess lift station for deterioration to determine		Included above 2-5 Year
4	803	1413 Hutchinson rd Fisher rd 0+060 - 0+203, off Height st 1+028-1+120			32 S-FM-PP-32		Reclaimed Effluent pipe, 75mm	Series 200	235	m	2013 8	80	75	\$425	\$99,875				1	3	4 Assess/Inspect forcemains and air release valve chamber	Operations	\$35,000 <b>5-10 Year</b>
4	803	1413 Hutchinson rd Fisher rd 0+203 - 0+426	2240-2	S FM PP	33 S-FM-PP-33		Reclaimed Effluent pipe, 100mm	Series 200 Series 200	223	m	2013 8	80	75	\$450	\$100,350				1	3	4 Assess/Inspect forcemains and air release valve chamber		Included above 5-10 Year
4	803	1413 Hutchinson rd       Fisher rd 0+060 - 0+203         1413 Hutchinson rd       Fisher rd 0+203 - 0+426	2240-2	S FM PP S FM PP	34         S-FM-PP-34           35         S-FM-PP-35           36         S-FM-VAL-36		Forcemain, 50mm Forcemain, 75mm	Series 200 Series 200	223	m m	2013 8 2013 8	80 80	75 75	\$400 \$425	\$57,200				1 1	3	<ul> <li>Assess/Inspect forcemains and air release valve chamber</li> <li>Assess/Inspect forcemains and air release valve chamber</li> </ul>		Included above5-10 YearIncluded above5-10 Year
4	803	1413 Hutchinson rdFisher /Heigh/Watson rd1413 Hutchinson rdFisher /Heigh/Watson rd	2240-2	S FM VAL	36 S-FM-VAL-36		Valve, 50mm Valve, 75mm		1 7		2013 4 2013 4	40	35	\$1,500 \$2,000	\$1,500				1	2	5		10+ Year
4	803	1413 Hutchinson rd Fisher /Heigh/Watson rd	2240-2	S FM VAL	37         S-FM-VAL-37           44         S-FM-VAL-44		Valve, 100mm		1	ea	2013 4	40	35	\$2,500	\$2,500				1	2	5		10+ Year
4	803	1413 Hutchinson rdFisher /Heigh/Watson rd1413 Hutchinson rdFisher /Heigh/Watson rd			45 S-FM-VAL-45 47 S-FM-VAL-47		Sewage air release valve c/w concrete chamber Effluent air release valve c/w concrete chamber	ValmaticVM-48A.4ValmaticVM-201C.2	2 2	ea ea	2013 20 2013 20	20 20	15 15	\$15,000 \$15,000	\$30,000 \$30,000				2 2	2 2	<ul> <li>Assess/Inspect air release valve chambers for deteriorati</li> <li>Assess/Inspect air release valve chambers for deteriorati</li> </ul>	Operations Operations	Included above     5-10 Year       Included above     5-10 Year
	802							Series 200	750		2013 8	80	75	¢ 425	\$318,750				1	2	A Access /Increasion for company for deterioration to deter	Operations	Included above 5-10 Year
5	803	1413 Hutchinson rdGalliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish1413 Hutchinson rdGalliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish	2240-3	S FM PP	48 S-FM-PP-48 49 S-FM-PP-49		Sanitary Pipe, 75mm Effluent pipe, 100mm		750	m	2013 8 2013 8	80	75	\$425	\$337,500				1	3	4Assess/Inspection forcemains for deterioration to detern4Assess/Inspection forcemains for deterioration to detern		Included above 5-10 Year
5	<u> </u>	1413 Hutchinson rdGalliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish1413 Hutchinson rdGalliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish	2240-3 2240-3	S FM SV S FM CO	50         S-FM-SV-50           76         S-FM-CO-76           79         S-FM-CO-79		Service Connections Flush Out, 75mm		26	ea ea	2013 4 2013 4	40 40	35 35	\$1,500 \$2.000	\$39,000 \$6,000				1	2	5 5		10+ Year 10+ Year
5	803	1413 Hutchinson rd Galliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish	2240-3	S FM CO	79 S-FM-CO-79		Flush Out, 100mm		3		2013 4	40	35	\$2,500	\$7,500				1	2	5		10+ Year
5	803	1413 Hutchinson rdGalliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish1413 Hutchinson rdGalliers Discharge Field, Pine St, Pricess Ave, Fairfield Rd, Garland Rd and Fish	2240-3		82 S-FM-VAL-82 86 S-FM-VAL-86		Sewage air release valve c/w concrete chamber Effluent air release valve c/w concrete chamber	Valmatic VM-48A.4 Valmatic VM-201C.2	4 4	ea ea	2013         2           2013         2	20	15 15	\$15,000 \$15,000	\$60,000				2	2 2	<ul> <li>Assess/Inspect air release valve chambers for deteriorati</li> <li>Assess/Inspect air release valve chambers for deteriorati</li> </ul>	Operations Operations	Included above5-10 YearIncluded above5-10 Year
6	803		044407.00				Sewermain, 200mm	SDR35		m	2008 8	80	70	\$550	\$252.120				1	1	ς		10+ Year
6	803	1413 Hutchinson rd     Bonner cres. (and lot 35 easement)	011497-20	S SS MH	87 S-SS-S-87 88 S-SS-MH-88		Sewer manhole,1.2-3.5m depths	<u>רכעתכ</u>			2008 4	40	30	\$350	\$88,000				1	1	5		10+ Year
7	803	1413 Hutchinson rd Fairfield Rd Sta 6+020 to 6+200					Forcemain, 50mm	Series 200	PVC 180	m	2013 8	80	75	\$425	\$76,500				1	3	4 Assess/Inspect forcemains and air release valve chamber	Operations	Included above 5-10 Year
7	803	1413 Hutchinson rd Fairfield Rd	2240-4	S FM SV	89         S-FM-PP-89           90         S-FM-SV-90           91         S-FM-VAL-91		Service Connections		2	ea ea	2013 4 2013 20	40	35	\$1,500 \$15,000	\$3,000				1	2	5		10+ Year       Included above     5-10 Year
		1413 Hutchinson rd Fairfield Rd			91 S-FM-VAL-91		Sewage air release valve c/w concrete chamber	Valmatic VM-48A.4				20	C1	. ,	\$12,000				2	2	4 Assess/Inspection air release valve chambers for deterio		
8	<u>803</u> 803	1413 Hutchinson rdGarland Ave Sta 4+032 to 4+1501413 Hutchinson rdGarland Ave	2240-4 2240-4	S FM PP S FM SV	92 S-FM-PP-92 93 S-FM-SV-93		Forcemain, 50mm Service Connections	Series 200	PVC 120 3		2013         8           2013         4	80 40	75 35	\$425 \$1,500	\$51,000 \$4,500				1	3 2	4 Assess/Inspect forcemains and air release valve chamber 5	Operations	Included above 5-10 Year 10+ Year
8	803	1413 Hutchinson rd Garland Ave	2240-4	S FM VAL	94 S-FM-VAL-94		Sewage air release valve c/w concrete chamber	Valmatic VM-48A.4		ea	2013	20	15	\$15,000	\$15,000				2	2	4 Assess/Inspect air release valve chambers for deteriorati	Operations	Included above 5-10 Year
9	803	1413 Hutchinson rd Holland Ave STA 5+030 to 5+195	2240-4		95 S-FM-PP-95		Forcemain, 50mm	Series 200			2013 8	80	75	\$450	\$74,250				1	3	4 Assess/Inspect forcemains and air release valve chamber	Operations	Included above 5-10 Year
9	803	1413 Hutchinson rdHolland Ave STA 9+030 to 9+0911413 Hutchinson rdHolland Ave	2240-4	S FM PP	96 S-FM-PP-96		Forcemain, 50mm Service Connections	Series 200		m ea	2013         8           2013         4	80 40	75	\$450 \$1.500	\$27,450 \$15.000				1	3	4 Assess/Inspect forcemains and air release valve chamber	Operations	Included above 5-10 Year 10+ Year
9	803	1413 Hutchinson rd Holland Ave	2240-4	S FM VAL	98 S-FM-VAL-98		Sewage air release valve c/w concrete chamber	Valmatic VM-48A.4		ea	2013 2013	20	15	\$15,000	\$15,000				2	2	4 Assess/Inspect air release valve chambers for deteriorati	Operations	Included above 5-10 Year
10	803	1413 Hutchinson rd     Hutchinson Rd STA 8+023 to 8+160					Forcemain, 50mm	Series 200	PVC 137	m	2013 8	80	75	\$450	\$61,650				1	3	4 Assess/Inspect forcemains and air release valve chamber	Operations	Included above 5-10 Year
10	803	1413 Hutchinson rdHutchinson Rd1413 Hutchinson rdHutchinson Rd	2240-4	S FM SV	100 S-FM-SV-100		Service Connections Sewage air release valve c/w concrete chamber		4		2013 4 2013 2	40	35	\$1,500 \$15,000	\$6,000 \$15,000				1	2	5 4 Assess/Inspect air release valve chambers for deteriorati	Operations	10+ Year       Included above     5-10 Year
10	803	1413 Hutchinson rd     Hutchinson rd       1413 Hutchinson rd     Hutchingson rd (easement)	011497-20	S SS S	99         S-FM-PP-99           100         S-FM-SV-100           101         S-FM-VAL-101           102         S-SS-S-102           103         S-SS-MH-103           104         S-SS-SV 104		Sewermain, 200mm	SDR35	1 PVC 236	m	2013         20           2008         80	80	70	\$550	\$13,000				1	1	5		10+ Year
10 10	803 803	1413 Hutchinson rdHutchingson rd (easement)1413 Hutchinson rdHutchinson rd subdivision	011497-20 011497-20	S SS MH S SS SV	103 S-SS-MH-103 104 S-SS-SV-104		Sewer manhole,1.2-3.5m depths Service connections		5 75	ea ea	2008 4 2008 4	40 40	30 30	\$8,000 \$3,000	\$40,000 \$225,000		+		1	1	5 5		10+ Year 10+ Year
4.4	000										2008	40	20	+ = / = = =	¢10.000				1	1			
<u> </u>	<u>803</u>		011497-20 011497-20	S SS MH S SS S	105         S-SS-MH-105           106         S-SS-S-106		Sewer manhole,1.2-3.5m depths Sewermain, 200mm	SDR35	PVC 158	ea m	2008 4 2008 8	40 80	<u> </u>	\$8,000 \$550	\$16,000 \$86,900				1	1	5		10+ Year
12	803	1413 Hutchinson rd Twin Cedars dr.			107 S-SS-MH-107		Sewer manhole,1.2-3.5m depths		8	еа	2008 4	40	30	\$8,000	\$64,000				1	1	5		10+ Year
	·	· · ·			· · · ·		· · ·	, ,	· · ·	1	· · ·	<b>I</b>					•					,	·

LIFT STATIO MORRISON HERSHFIELD FIELD INSPECTION Twin Cedars Sever 803 Nov. 22/17 SYSTEM: DATE: 5170700 SYSTEM CODE: PROJECT No .: INSPECTED BY: Aden CVRD STAFF PRESENT: David 1) Site Conditions 2) Building Conditions 3) Condition of wet well: Visible Deterioration of structure and hatch:

803 (1)



803 Twin Cedars Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's



803 (3)



**803 (4)** 2 of 26 803 Twin Cedars Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

803 (5)



**<sup>803 (6)</sup>** 3 of 26



803 (7)



**803 (8)** 4 of 26



803 (9)



**803 (10)** 5 of 26



803 (11)



**803 (12)** 6 of 26







**803 (14)** 7 of 26



803 (15)



**803 (16)** 8 of 26



803 (17)



**803 (18)** 9 of 26



803 (19)



**803 (20)** 10 of 26



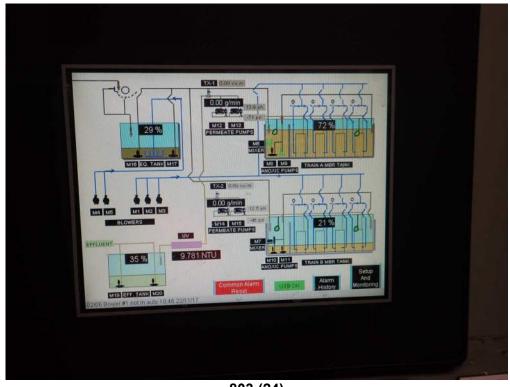
803 (21)



**803 (22)** 11 of 26



803 (23)

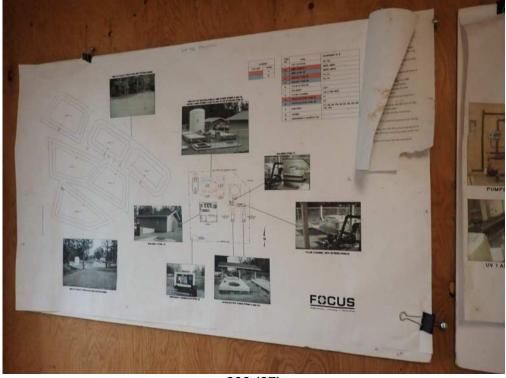


**803 (24)** 12 of 26 803 Twin Cedars Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

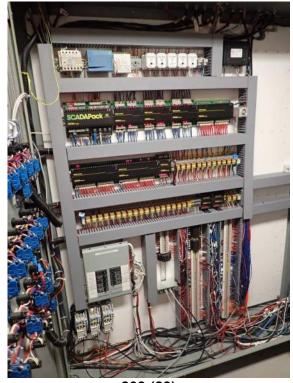
803 (25)



**803 (26)** 13 of 26



803 (27)



**803 (28)** 14 of 26

<image>

803 Twin Cedars Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

803 (29)



**<sup>803 (30)</sup>** 15 of 26



803 (31)



**803 (32)** 16 of 26



803 (33)



**803 (34)** 17 of 26



803 (35)



**803 (36)** 18 of 26



803 (37)

	TEN.
SEWAGE TREATMENT PLANT FIELD INSPECTION	MORRISON HERSHFIE
SYSTEM: Twin Ceders Sever	DATE: NOV. 22/17
SYSTEM 803	PROJECT No.: 5170700
INSPECTED Adv	CURD STAFF David.
1) Type of Treatment System (Schematic)	Penitrification re
LS I Bar sher -> EQ ->	CVRD STAFF David. PRESENT: David. Penitrikation Fully Atroxic Digoster DLS-3R18 Bioreactic. Las Parte a gree agthetic in promote. Atom a green agthetic in promote.
2) <u>Site Conditions/Security</u> → Lorking C	Bioreaction. 1963 Parts
3) <u>Condition of Structure</u> - full - full	-2 fr EQ +4. 925
803 (3 19 of	38)



803 (39)



**803 (40)** 20 of 26



803 (41)



**803 (42)** 21 of 26



803 (43)



**803 (44)** 22 of 26

803 (45)



**803 (46)** 23 of 26



803 (47)



**803 (48)** 24 of 26



803 (49)



**803 (50)** 25 of 26



803 (51)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Twin Cedars Sewer - Sewer Treatment Plant- Functional Code 803

		đno	-	न	cc	OMPONENT		CONDITION ASSESSMEN	п						LIFECYCLE DAT	A	RECOMMENT	DATION			If recommended		Construction of the second				OPINION OF	PROBABLE	COST		
BLDG Name	BLDG Type	Function Code Level 1 Major Gr	Level 2 Group Elements	Level 3 Individu Elements	D	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead to a loss of use of the facility ?	condition adversely affect	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Twin Cedars Sewer Sewer Treatment Plant	- Sewer Building	803 A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	4	4	2008	21-Nov-17	МН	10	50	40	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	650	\$30	SF	\$19,500	0%	5%	5%	\$22,000
Twin Cedars Sewer Sewer Treatment Plant		803 A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Sla on Grade	ab Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	2008	21-Nov-17	МН	10	50	40	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	650	\$30	SF	\$19,500	0%	5%	5%	\$22,000
Twin Cedars Sewer Sewer Treatment Plant	- Sewer Building	803 A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.		4	2008	21-Nov-17	МН	10	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500	LS	\$500	0%	0%	5%	\$1,000
Twin Cedars Sewer Sewer Treatment Plant	Sewer Building	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.		4	2008	21-Nov-17	МН	10	50	40	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No								
Twin Cedars Sewer Sewer Treatment Plant	Building	803 B Shell			B10 Superstructure	Interior of Building/ Genera Superstructure		The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4		21-Nov-17		10	50	40	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	650	\$30	SF	\$19,500	0%		5%	\$22,000
Twin Cedars Sewer Sewer Treatment Plant	- Sewer Building	803 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitiou Siding	s 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4	2008	21-Nov-17	МН	10	12	2	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	650	\$8	SF	\$5,200	0%	15%	5%	\$7,000
Twin Cedars Sewer Sewer Treatment Plant	- Sewer Building	803 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls 8201001 Exterior Enclosure	Exterior Walls/ Cementitiou Siding	is 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4	2008	21-Nov-17	мн	10	50	40	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	650	\$35	SF	\$22,750	0%	5%	5%	\$26,000
Twin Cedars Sewer Sewer Treatment Plant		803 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	4	4	2008	21-Nov-17	МН	10	50	40	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$20	SF	\$2,000	0%	10%	5%	\$3,000
Twin Cedars Sewer Sewer Treatment Plant	Sewer Building	803 B Shell	CB20 Exterior Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/Windows	1	Two vinyl framed windows are present on the building.	4	4	2008	21-Nov-17	МН	10	25	15	Replace windows at the end of their service lifes.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$200	EA	\$400	0%	10%	5%	\$1,000
Twin Cedars Sewer Sewer Treatment Plant	Sewer Building	803 B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors		1	One painted metal door is present on the building.	4	4		21-Nov-17		10	30	20	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA	\$1,500	0%	5%	5%	\$2,000
Twin Cedars Sewer Sewer Treatment Plant	- Sewer Building	803 B Shell	B20 Enclosure	E2030 Exterior Doors	B203004 Overhead ar Roll-up Doors	nd Exterior Walls/ Door	1	One metal overhead door is present.	4	4	2008	21-Nov-17	мн	10	20	10	Replace doors at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA	\$1,500	0%	5%	5%	\$2,000
Twin Cedars Sewer Sewer Treatment Plant	- Sewer Building	803 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	4	4	2008	21-Nov-17	МН	10	25	15	Replace the roof assembly at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	700	\$30	SF	\$21,000	0%	5%	5%	\$24,000
Twin Cedars Sewer Sewer Treatment Plant		803 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	4	4	2008	21-Nov-17	мн	10	25	15	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	50	\$10	SF	\$500	0%	10%	5%	\$1,000
Twin Cedars Sewer Sewer Treatment Plant	Sewer Building	803 C Interiors	C30 Interior Finish	es C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2 & 3	The interior plywood walls are not painted, the interior gypsum ceiling is painted.	4	4	2008	21-Nov-17	МН	10	20	10	Repaint interiors as required. It is assumed that the walls will be painted at this time. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	LS	\$1,500	0%	0%	5%	\$2,000
Twin Cedars Sewer Sewer Treatment Plant	Sewer Building	803 C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	t	An exterior light is present on the building near the entrance.	4	4	2008	21-Nov-17	МН	10	20	15	Repalce lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley	Regional	District				
Facility Condition	n Assessr	nent and	Capital Pl	an		

Twin Cedars Sewer - Sewer Treatment Plant- Function	nal Code 803
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		wer freat																														
	. e	dnou	ments	3	co	MPONENT	CONDITION ASSESSMEN					LIFECYCLE D	_	RECOMMEN	DATION		If recomm works	iended	Can the curren	nt		OPINION	OF PROBAB	LE COST		10-YE	AR CAPITAL PLAN				4	
6 Name	G Type ion Cot	hajor G ments	oup Ele	el 3 Individ Elements		/ Type		ance	rr Last ction	nt Date	d By 2018	al le or terval	me g to EOI Action			ţA	Can this work be complete phased over rate multiple years ? deteriorat	can the of to a loss of use	ad adversely affe the buildings security of safe	et Ag	ą	t ror mt Cos	Ŧ	gency	5%	2012 Dollars	8 2019	2020 2021	2022 2	023 2024	2025 2	2026 2027
BLD	BLD	Level 1 h	Level 2 Gn	Level 3 Ele		Location by	to Description & History	Condit	Yr New o Major A	As sessme	Assesse Age in :	Typical Life Cycle or Action Interval	Est. Time temaining to EOL or Major Action	Recommendation	Typ	Priori	multiple years ? deterioral expecte increas	tion be the facility ed to se ?	the buildings security of safe	Quan.	Unit R	Unit Subtotal Repair or teplacement	Const	Contin- 1	5% Tax	Total in Dolla	\$8,000	\$0 \$0	\$0	\$0 \$0	\$0 S	\$0 \$4,000
Twin Cedars Sewer Sewer Treatment	r - Sewer 803 Building	A Substructure	e A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from	4 4	2008 21	-Nov-17	MH 10	50	40	The foundations are expected to remain serviceable for the life of the building. No	Not Applicable	Not Applicable	Yes Yes	Yes	No	650	\$30	SF \$19,500	0%	5%	5%	\$22,000						
Plant							review, with the exception of some above-grade foundation wall on some elevations.							capital expenses associated with this item are expected.																		
Twin Cedars Sewer	r - Sewer 803	A Substructure	e A10 Foundations	A1030 Slab on Grad	de A103001 Standard Slat	Interior of Building At-Grade/ 1	The floor is concrete slab-on-grade (polished concrete	4 4	2008 21	-Nov-17	MH 10	50	40	The concrete slab-on-grade is expected to	Not Applicable	Not	Yes Yes	Yes	No	650	\$30	SF \$19,500	0%	5%	5%	\$22,000				—	+	
Sewer Treatment Plant	Building				on Grade	Slab-on-Grade	throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or							remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this		Applicable																
							observed.							item are expected.																		
Twin Cedars Sewer Sewer Treatment		A Substructure	e A10 Foundations	A1030 Slab on Grad	de A103006 Foundation Drainage	Underground/ Perimeter 1 Drains	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by	4 4	2008 21	-Nov-17	MH 10	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No N/A	No	N/A	1	\$500	LS \$500	0%	0%	5%	\$1,000	\$1,000				+	
Plant	8						facility staff. No information was available regarding the scoping of the system to review for continuity.																									
Twin Cedars Sewer	r - Sewer 803	A Substructure	e A10 Foundations	A1030 Slab on Grad	de A103006 Foundation	Underground/ Perimeter 1	Perimeter drain pipes are assumed to be installed at the footing	4 4	2008 21	-Nov-17	MH 10	50	40	The foundation drainage is expected to	Contingency	3 - Future	N/A N/A	. No	No											_	+	
Sewer Treatment Plant	Building				Drainage	Drains	level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping							last the life of the building. No major capital expenditures are expected to be		Renewal																
							of the system to review for continuity.							required. Note: this should be updated with the																		
														results of the foundation drainage review recommended in A103006 Foundation																		
														Drainage (above).																		
Twin Cedars Sewer Sewer Treatment	r - Sewer 803 Building	B Shell	B10 Superstructur	e B10 Superstructure	B10 Superstructure	Interior of Building/ General 1 Superstructure	The superstructure is comprised of wood framing on all four wall and roof trusses, supported on a cast-in-place concrete	4 4	2008 21	-Nov-17	MH 10	50	40	Interior protected structural components are expected to last the life of the	Not Applicable	Not Applicable	Yes Yes	Yes	No	650	\$30	SF \$19,500	0%	5%	5%	\$22,000						
Plant							foundation.							building. No major capital expenditures are expected to be required.																		
							No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.																									
											MH 10									650		SF \$5.200				40.000	-					
Twin Cedars Sewer Sewer Treatment Plant	r - Sewer 803 Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	ls B201001 Exterior Enclosure	Exterior Walls/ Cementitious 1 Siding	Painted cementitious siding and wood trim are present on the exterior walls.	4 4	2008 21	-Nov-17	MH 10	12	2	Repaint siding and trim. At the time of painting, replace sealant	Repair Allowanc	e 3 - Future Renewal	Yes Yes	No	No	650	\$8	SF \$5,200	0%	15%	5%	\$7,000	\$7,000					
														joints and wood trim as required.																		
Twin Cedars Sewer		B Shell	CB20 Exterior	B2010 Exterior Wa	ls B201001 Exterior	Exterior Walls/ Cementitious 1	Painted cementitious siding and wood trim are present on the	4 4	2008 21	-Nov-17	MH 10	50	40	The cementitious siding is expected to last	t Replacement	3 - Future	Yes Yes	No	No	650	\$35	SF \$22,750	0%	5%	5%	\$26,000						
Sewer Treatment Plant	Building		Enclosure		Enclosure	Siding	exterior walls.							the life of the building. Note: isolated sealant and wood trim		Renewal																
														replacement should be completed as part of the ongoing painting.	:																	
Twin Cedars Sewer	r Sever 902	8 Shell	CB20 Exterior	82010 Exterior Wa	ls B201001 Exterior	Exterior Walls/Soffit 1	Perforated metal soffit is present at the roof overhangs.		2008 21	-Nov-17	MH 10	50	40	The perforated metal soffit is expected to	Replacement	3 - Future	Yes Yes	No	No	100	\$20	SF \$2,000	0%	10%	546	\$3,000	_			_		
Sewer Treatment Plant	Building	D She	Enclosure	SECTO EXCLUSI WE	Enclosure	Excitor water John T	consider mean some is present at the root overhangs.		2000 11	107 17	10	50	40	last the life of the building. No capital expenses associated with this item are	neplacement	Renewal			10	100	20	51 52,000	0.0	10/0	570	55,000						
														expected.																		
Twin Cedars Sewer Sewer Treatment		B Shell	CB20 Exterior Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/Windows 1	Two vinyl framed windows are present on the building.	4 4	2008 21	-Nov-17	MH 10	25	15	Replace windows at the end of their service lifes.	Replacement	3 - Future Renewal	Yes Yes	No	No	2	\$200	EA \$400	0%	10%	5%	\$1,000						
Twin Cedars Sewer Sewer Treatment		B Shell	B20 Enclosure	E2030 Exterior Doc	rs B203001 Solid Doors	Exterior Walls/ Door 1	One painted metal door is present on the building.	4 4	2008 21	-Nov-17	MH 10	30	20	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes Yes	No	No	1	\$1,500	EA \$1,500	0%	5%	5%	\$2,000						
Plant																																
Twin Cedars Sewer Sewer Treatment	r - Sewer 803 Building	B Shell	B20 Enclosure	E2030 Exterior Doc	rs B203004 Overhead an Roll-up Doors	d Exterior Walls/ Door 1	One metal overhead door is present.	4 4	2008 21	-Nov-17	MH 10	20	10	Replace doors at the end of its service life.	. Replacement	3 - Future Renewal	Yes Yes	No	No	1	\$1,500	EA \$1,500	0%	5%	5%	\$2,000						\$2,000
Plant																																
Twin Cedars Sewer Sewer Treatment Plant	r - Sewer 803 Building	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly 1	The roof is sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that	4 4	2008 21	-Nov-17	MH 10	25	15	Replace the roof assembly at the end of its service life.	Replacement	3 - Future Renewal	No Yes	No	No	700	\$30	SF \$21,000	0%	5%	5%	\$24,000						
							drain into below grade piping.							Ongoing maintenance of the roof should include review of all exposed fasteners																		
														and resealing of penetrations.																		
Twin Cedars Sewer Sewer Treatment	r - Sewer 803 Building	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly 1	The roof is sloped assembly with asphalt shingles.	4 4	2008 21	-Nov-17	MH 10	25	15	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes Yes	No	No	50	\$10	SF \$500	0%	10%	5%	\$1,000						
Plant							The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.																									
Twin Cedars Sewer Sewer Treatment Plant	r - Sewer 803 Building	C Interiors	C30 Interior Finish	es C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes 2 &	3 The interior plywood walls are not painted, the interior gypsum ceiling is painted.	4 4	2008 21	-Nov-17	MH 10	20	10	Repaint interiors as required. It is assumed that the walls will be painted at this time.	Repair Allowanc	e 3 - Future Renewal	Yes Yes	No	No	1	\$1,500	LS \$1,500	0%	0%	5%	\$2,000						\$2,000
														Note: a long service life has been included	1																	
														to reflect to building usage.		1																
Twin Cedars Sewer Sewer Treatment		C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	4 4	2008 21	-Nov-17	MH 10	20	15	Repalce lights at the end of their service life.	Replacement	3 - Future Renewal	Yes Yes	No	No	1	\$200	LS \$200	0%	0%	5%	\$1,000						
Plant																																
L	- I I		1	1	1		I	· · · · · · · · · · · · · · · · · · ·		I				1	·	-	1 I	-	-1		1	I		1								

Cowichan Valley Regional District



Twin Cedars Sewer - Sewer Treatment Plant- Functional Code 803

Photo 1



Photo 2

Cowichan Valley Regional District



Twin Cedars Sewer - Sewer Treatment Plant- Functional Code 803

Photo 3



## 804 - Lambourn Estates Sewer

Infrastructure Condition Assessment and Capital Plan 1226 Sutherland Dr, Cowichan Bay, BC

**PROPERTY STATISTICS AND REPORT SUMMARY** 

System Replacement Cost Estimate	\$5,617,168	
Number of Users	155	
Replacement Cost Per User	\$36,240	
Annual Replacement Cost (40 Years)	\$61,391	per year
Annual Replacement Cost (80 Years)	\$42,480	per year
10 Year Capital Plan Total	\$120,000	
10 Year Operations and Maintenance Plan Total	\$105,000	

#### **PROPERTY DESCRIPTION**

The system was originally constructed in 1967, however, limited information is available about what was

Development	Year Installed	Source
Collection System	1990	CVRD Input
Lambourne Drive	1993	Record Drawings (8619)
Sutherland Drive	2001	Record Drawings (10126BSJ)
Hurtin Road and Antoine View Place	2006	Record Drawing (010788-20-01-ABS)
Sutherland Drive	2008	Record Drawings (01075-20)
Polo Field Place Lift Station	2009	Record Drawings (010745-20-01-ABS)
Sewage Treatment Plant	2011	Record Drawing (30200442)
Lanes Road	2013	Record Drawing (11231109)
Mobile Park	2013	Record Drawing (CI-02-LAM)
Sutherland Drive	2015	Record Drawing (2014-02647)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### **CONTACT INFORMATION**

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## 804 - Lambourn Estates Sewer

### Infrastructure Condition Assessment and Capital Plan 1226 Sutherland Dr, Cowichan Bay, BC

Date Prepared

July 18, 2018

#### **REPORT NOTES**

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 6, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
,	and Kieran Bertsch	,
July 3, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD for
	and Kieran Bertsch	review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the
		following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		3) Include disclaimer on cost estimates
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New



Infrastructure Condition Assessment and Capital Plan 1226 Sutherland Dr, Cowichan Bay, BC

Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
	3						
langesternt	4						
Important (1 - 2 Year)	5						\$0
(1-2168)	6						
Short Term	7	1	S-STP-FTR-6	Capital Renewal	Replace membrane filters in STP.	\$120,000	
(2 - 5 Year)	8						\$120,000
(2 5 (car)	9						
	10						
Medium Term (5 - 10 Year)	11						\$0
(5 - 10 Year)	12						
						Total	\$120,000

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 (ear)	3						
Important	4						
Important (1 - 2 Year)	5						\$0
(1 - 2 Tear)	6						
	7	2	ALL	Operations	Inspect/assess Polo Field Pl. lift station for deterioration to determine replacement timing/phasing.	\$10,000	
Short Term	8						
(2 - 5 Year)	9						\$10,000
(2 5 (cu))	10						
	11						
	12						
	13	1	ALL	Operations	Assess/Inspect wastewater treatment plant for deterioration to determine replacement timing/phasing.	\$20,000	
Medium Term	14	6, 8, 10, 11 and 13	As Noted	Operations	Assess/Inspect forcemains and air release valves for deterioration to determine replacement timing/phasing.	\$35,000	É05-000
(5 - 10 Year)	15	15 to 26	As Noted	Operations	Assess/Inspect collection system for sources of I&I and determine replacement timing/phasing.	\$40,000	\$95,000
	16						
	17						
						Total	\$105,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner: System:	Cowichan Valley F 804	 egional District (CVRD) Lambourn Estates Sewer	-	Infrastructure Condition A	Assessment															
Civic Address: Geographic Location: Customers:	1226 Sutherland I South of Shawnig Parcels:			Note: Update GIS. Forcemain quantity does not reflect what is on the record draw	wings.						Total Replacement Valu	e \$5,617,168 \$36,240								
Asset ID	Users:	Location Address	Location	Asset Code       DWG Ref     Minor     Spec     ID     Asset Code	Photo Description Make	Model Mat		set Inventory	r Installed	Current Year     2018       Year Renewed     Service Life Expectancy     Est. Remaining Statement St			Asse Physical Condition Functional Condit	Condition Assessment	Probablity of Failure	Severity of Failure Co	Recommendations / Action Items Ondition Description		0 Year Capital Plan Budget Estimate	Timing Comment/Question to be resolved
1	804	1226 Sutherland Dr.	Lambourn WWTP	Site Visit / Photos     S     STP     STP     1     S-STP-STP-1	14 to 33 Sewage treatment plant building		1		2011		Refer to Lambourn Esta Sewer System Building		Good - fenced and gated, housing over blowers, electrical, and	Able to meet capacity, major I&I				R	efer to Lambourn states Sewer ystem Building	
1	204	1226 Sutherland Dr		30200442 S STP AT 2 S-STP-AT-2	Anoxic tank (T-201). Capacity: 21.2 m3,				2011		Condition Assessment.	¢150.000	UV		2		Assess/Inspect wastewater treatment plant	A	condition sseessment.	
1	804	1226 Sutherland Dr. 1226 Sutherland Dr.	Lambourn WWTP	30200442         S         STP         AT         2         S-STP-AT-2           30200442         S         STP         AT         3         S-STP-AT-3	Dimension: 7.5'L x 10'W x 11.5'H	Flygt 4610			2011 2011	20 13	\$150,000	\$150,000			2	2	timing/phasing. Assess/Inspect wastewater treatment plant	Operations Operations	\$20,000 5 Included above 5	5-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP AT 5 S-STP-AT-5	Anoxic mixer (MX-201). Motor: 1.2 hp Supplemental Aeration Tank (T-301). Capacity: 7	Figgi 4010	1		2011	40 33	\$20,000	\$100,000			2	2	timing/phasing. Assess/Inspect wastewater treatment plant		Included above 5	
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP MT 5 S-STP-MT-5	m3, Dimension: 2.5'L x 10"W x 11.5'H       14, 19 to 23       Membrane Tank (T-401). Capacity: 51 m3,				2011	40 33	\$150,000	\$150,000			2	2	timing/phasing. Assess/Inspect wastewater treatment plant		Included above 5	
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP FTR 6 S-STP-FTR-6	Membrane Modules (M-401, M-402, M-403, M-	TMR-140-100S	4		2011		\$30,000	\$120,000	Fair Meets standard	Near the end of service	3	3	timing/phasing.	apital Renewal	\$120,000	2-5 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP PMP 10 S-STP-PMP-10	404). Plates: 100. c/w 2" PVC pipes and valvesSambraneInternal Recirculation Pumps (P-401, P-402). Flow rate: 270-540 m3/d, Head: 15-20 ft, Motor: 1.0Myers		2		2011	20 13	\$8,000	\$16,000		life	2	2	Assess/Inspect wastewater treatment plant		Included above 5	
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP UV 12 S-STP-UV-12	hp, Electrical: 230V/60Hz Trojan	3100К	1		2011	20 13	\$25,000	\$25,000			2	2	timing/phasing. Assess/Inspect wastewater treatment plant		Included above 5	
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442         S         STP         PMP         13         S-STP-PMP-13	Permeate pump		2	ea	2011	20 13	\$5,000	\$10,000			2	2	timing/phasing.Assess/Inspect wastewater treatment plantfor deterioration to determine replacement	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP ET 15 S-STP-ET-15	14, 19 to 23 Equalization storage tank, 48 m3		1	еа	2011	40 33	\$150,000	\$150,000	Good Meets standard	Buffers flows during	2	2	timing/phasing.Assess/Inspect wastewater treatment plantfor deterioration to determine replacement	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442         S         STP         PMP         16         S-STP-PMP-16	EP pumps (Meyer)		2	еа	2011	20 13	\$8,000	\$16,000			2	2	timing/phasing.Assess/Inspect wastewater treatment plantfor deterioration to determine replacement	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP FM 18 S-STP-FM-18	Inlet flow meter		1	еа	2011	30 23	\$10,000	\$10,000			2	2		Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP FTR 19 S-STP-FTR-19	17, 19 Filter, Salsnes SF1000 2mm screen		1	еа	2011	20 13	\$100,000	\$100,000			2	2		Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP BLW 20 S-STP-BLW-20	EQ Tank blower		1	еа	2011	20 13	\$30,000	\$30,000	Good Meets standard		2	2	timing/phasing.Assess/Inspect wastewater treatment plantfor deterioration to determine replacementtiming/phasing.	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP BLW 21 S-STP-BLW-21	Aeration MBR / Blower		2	ea	2011	20 13	\$30,000	\$60,000	Good Meets standard		2	2	Assess/Inspect wastewater treatment plant	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP FM 23 S-STP-FM-23	Air flow meter		4	еа	2011	20 13	\$5,000	\$20,000			2	2	Assess/Inspect wastewater treatment plant	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	30200442 S STP PP 27 S-STP-PP-27	16, 19 to 23, 27 to 29 Process piping c/w valves, tees		1	LS	2011	40 33	\$60,000	\$60,000			2	2	Assess/Inspect wastewater treatment plant	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	Site Visit / Photos S STP GEN 28 S-STP-GEN-28	32 Generator (STP)		1	ea	2011	40 33	\$60,000	\$60,000	Good Meets standard		2	2	Assess/Inspect wastewater treatment plant	Operations	Included above 5	-10 Year
1	804	1226 Sutherland Dr.	Lambourn WWTP	Site Visit / Photos S STP COM 29 S-STP-COM-29	18, 25, 26, 30, 31 Communications (STP)		1	LS	2011	10 3	\$9,000	\$9,000	Good Meets standard		2	2	Assess/Inspect wastewater treatment plant	Operations	Included above 5	10 Year
2	804	1226 Sutherland Dr.	Polo field pl, 1+010	010745-20 S LS WW 30 S-LS-WW-30	2, 3 Lift station, 1500mm concrete wetwell chamber		1	еа	2008	40 30	\$350,000	\$350,000	Good Meets standard	Able to meet capacity	2	3		Operations	\$10,000	2-5 Year
2	804	1226 Sutherland Dr.	Polo field pl, 1+010	010745-20 S LS VC 31 S-LS-VC-31	2, 4 Sewage 1500mm concrete valve chamber		1	еа	2008	40 30	\$80,000	\$80,000	Good Meets standard		2	3		Operations	Included above	2-5 Year
2	804	1226 Sutherland Dr.	Polo field pl, 1+010	010745-20 S LS PMP 32 S-LS-PMP-32	3, 12Submersible sewage grinder pumps, 5HP, 3450 RPM 230/1/60Hz with 75mm dischargeMyers	WGX50H-21	2	еа	2008	20 10	\$10,000	\$20,000	Good Meets standard		2	3		Operations	Included above	2-5 Year
2	804	1226 Sutherland Dr.	Polo field pl, 1+010	010745-20 S LS GEN 34 S-LS-GEN-34	2, 5, 10, 11 Generator, 25kW, 240Volt, 1 phase, 60 Hz, 1800 RPM. Skid mounted.		1	еа	2008	40 30	\$40,000	\$40,000	Good Meets standard		2	3	timing/phasing. Inspect/assess Polo Field Pl. lift station for deterioration to determine replacement timing/phasing.	Operations	Included above	-5 Year
2	804	1226 Sutherland Dr.	Polo field pl	Site Visit / Photos S LS COM 35 S-LS-COM-35	2, 6 to 9 Communications (LS)		1	LS	2008	10 0	\$9,000	\$9,000	Good Meets standard		2	3	Inspect/assess Polo Field Pl. lift station for	Operations	Included above	-5 Year
3	804	1226 Sutherland Dr.	Sutherland Dr. 0+123 (0+000)	10126BSJ S LS WW 36 S-LS-WW-36	NA 1500mm Precast Concrete Manhole c/w concrete		1	еа	2001	40 23	n/a	n/a	Not maintained by							
3	804	1226 Sutherland Dr.	Sutherland Dr. 0+123 (0+000)	10126BSJ S LS WW 37 S-LS-WW-37	base section       NA       1700 gal (7700L) single chamber precast concrete       overflow chamber		1	ea	2001	40 23	n/a	n/a	CVRD - owned by strata Not maintained by							
					overflow chamber         Waterproof enclosure c/w goulds EEMAC3 duplex         controller w/ alternator, individual hr meters,								CVRD - owned by strata Not maintained by							
3	804	1226 Sutherland Dr.	Sutherland Dr. 0+123 (0+000)	10126BSJ S LS COM 38 S-LS-COM-38	NA       level controls, 110V breaker protected duplex         outlet, condensation heater and top mounted       alarm light and bell.		1	LS	2001	40 23	n/a	n/a	CVRD - owned by strata							
3	804	1226 Sutherland Dr.	Sutherland Dr. 0+123 (0+000)	10126BSJ S LS PMP 39 S-LS-PMP-39	NA Submersible pump, 2HP, 1 phase, 230V, 3500 Goulds RPM, 60 Hz (WS2012BHF)	3887	2	ea	2001	20 3	n/a	n/a	Not maintained by CVRD - owned by strata							
3	804	1226 Sutherland Dr.	Sutherland Dr. 0+123 (0+000)	10126BSJ S LS PP 41 S-LS-PP-41	NA Process piping c/w valves, tees		1	ea	2001	40 23	n/a	n/a	Not maintained by CVRD - owned by strata							
4	804 804	1226 Sutherland Dr. 1226 Sutherland Dr.	Antoine View pl, SMH H - SMH I Antoine view place, 2+100	010788-20-01-ASB         S         SS         S         42         S-SS-S-42           010788-20-01-ASB         S         SS         MH         43         S-SS-MH-43	Sewermain pipe, 100mm	DR 28 P	VC 98		2008 2008	80 70	\$450	\$44,100			1	1	5 <b>5</b>			0+ Year
<u>г</u>						ı	I <u>*</u>				\$0,000	J 90,000	I	1						

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804 Lambourn Estates Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

804 (1)





804 (3)



**804 (4)** 2 of 17



804 (5)



**804 (6)** 3 of 17



804 (7)



**804 (8)** 4 of 17



804 (9)



**804 (10)** 5 of 17

804 (11)

Project: Cowichan Valley Regional District
PROJECT: Cowichan Valley Regional District Royal Island
PUMP MANUFACTURER: F.E. MYERS MODEL: WGX50H-21-50 H.P.: 5 VOLTAGE: 230/1/60 MOTOR AMPS: 32 FL.A.
IMPELLER DIAMETER: 5.5 INCHES 140 MILLIMETERS
PUMP DESIGN FLOW: 65 USGPM 4.1 L/SEC.
PUMP DESIGN HEAD: 88 FT. 26.8 METERS T.D.H.
KIOSK SERVICE VOLTAGE: 120/240/1/60
SERVICE SIZE: 100 AMP.
SERIAL NO: 08-077-1 SUPPLIED: SEPTEMBER 2008
1635 INDUSTRIAL AVENUE, PORT COQUITLAM, BC. V3C 6M9 PHONE: (604) 552-7900 / FAX: (604) 552-7901

804 Lambourn Estates Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

617

Cale N	STN892			
R // A	Catherine	interesting in the second s		
SEWAG FIELD IN	E TREATMENT PLANT	M. Mo	PRRISON HERSHFIELD	
SYSTEM:	Lambarn Estates Sever	DATE:	Na. 24/17	1
LOCATION: SYSTEM CODE:	804 Ada-	PROJECT No.:	5170700	CES AL
INSPECTED BY:	Ada	CVRD STAFF PRESENT:	Todd	-
1) <u>Type of Tr</u>	eatment System (Schematic)			
Constant of				
2) <u>Site Condi</u>	tions/Security			
3) Condition of	of Structure:			
	erioration of structure:			1

804 (13)



**<sup>804 (14)</sup>** 7 of 17



804 (15)



**804 (16)** 8 of 17 804 Lambourn Estates Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

804 (17)



**804 (18)** 9 of 17



804 (19)



**804 (20)** 10 of 17



804 (21)



**804 (22)** 11 of 17



804 (23)



**804 (24)** 12 of 17



804 (25)



**<sup>804 (26)</sup>** 13 of 17



804 (27)



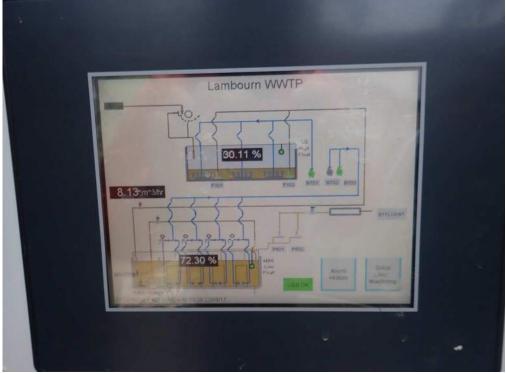
**804 (28)** 14 of 17



804 (29)



**804 (30)** 15 of 17



804 (31)



**<sup>804 (32)</sup>** 16 of 17

804 (33)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Lambourn Estates Sewage - Sewage Treatment Plant - Functional Code 804

		dno		<b>.</b>	со	MPONENT		CONDITION ASSESSMEN	r _	_		_		_	LIFECYCLE DA	TA	RECOMMEND	DATION	_		If recommended		<b>C</b> #		_	0	PINION OF P	PROBABLE	соѕт	_	
BLDG Name BLDG Name	Function Code	Level 1 Major Grt Elements	Level 2 Group Elements	Level 3 Individu Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	phased over	work not complete can the rate of deterioration be expected to increase ?	to a loss of use of	condition	Quantity	Unit Rate	Unit Suttotal	Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations		The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	4	4	2011	21-Nov-17	МН	7	50	43	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$20	SF	\$2,000	0%	5%	5%	\$3,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		A Substructure	A10 Foundations	A1030 Slab on Grade	A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade		The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	2011	21-Nov-17	мн	7	50	43	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$10	SF	\$1,000	0%	5%	5%	\$2,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure		The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	2011	21-Nov-17	мн	7	50	43	Interior protected structural components are expected to last the life of the building. No angior capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$40	SF	\$4,000	0%	5%	5%	\$5,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		B Shell	CB20 Exterior Enclosure	B2010 Exterior Walls	B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1	Painted connetitious siding and wood trim are present on the exterior walls.	4	4	2011	21-Nov-17	МН	7	12	5	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	140	\$8	SF	\$1,120	0%	15%	5%	\$2,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant			CB20 Exterior Enclosure	B2010 Exterior Walls	B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding		Painted cementitious siding and wood trim are present on the exterior walls.	4	4	2011	21-Nov-17	МН	7	50	43	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	140	\$35	SF	\$4,900	0%	5%	5%	\$6,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant			CB20 Exterior Enclosure	B2010 Exterior Walls	B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	4	4	2011	21-Nov-17	мн	7	50	43	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	20	\$20	SF	\$400	0%	10%	5%	\$1,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant	e 804 g	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	4	4	2011	21-Nov-17	МН	7	30	23	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA	\$500	0%	5%	5%	\$1,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is standing seam metal roof. The roof is edge drained.	4	4	2011	21-Nov-17	мн	7	40	33	Replace the metal roof at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations. Ongoing reviews should be completed at the pole penetration through the roof.	Replacement	3 - Future Renewal	No	Yes	No	No	120	\$30	SF	\$3,600	0%	5%	5%	\$4,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		C Interiors	C30 Interior Finishes	C3010 Wall Finishes	C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes		The interior gypsum and plywood walls and ceilings are painted.	4	4	2011	21-Nov-17	МН	7	20	13	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$2,500	LS	\$2,500	0%	0%	5%	\$3,000
Lambourn Estates Sewage Sewage - Sewage Building Treatment Plant		C Interiors		D5020 Lighting and Branch Wiring	C301003 Gypsum Wallboard Finishes	D502002 Lighting Equipment		An exterior light is present on the building near the entrance.	4	4	2011	21-Nov-17	МН	7	20	13	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Lambourn Estates Sewage - Sewage Treatment Plant - Functional Code 804

			9	nt s		cc	OMPONENT		CONDITION ASSESSMEN	NT.				LIFECYCLE	DATA	RECOMMEN	NDATION			If recommended	1				OPINION	OF PROBABI	LE COST			10-YEAR CAPI	ITAL PLAN				
BLDG Name	BLDG Type	Function Code	Level 1 Major Grou Elements	Level 2 Group Eleme	Level 3 Individua Elements	a	Location / Type		Description & History	Condition	Performance Yr New or Last Major Action	Assessment Date	Assessed By Age in 2018	Typical Ufe Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Туре	Priority	Can this work be phased over multiple years ?	rate of	this system lead	adversely affect	Quantity	Unit Rate Unit	Subtotal Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars	2018 2 \$0	2019 2020 \$0 \$0	2022 2 \$2,000	2023 202 \$0 \$0		2027 \$0
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 A Sub	bstructure /	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	wi	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concelled from eview, with the exception of some above-grade foundation wall on some elevations.	4	4 2011	21-Nov-17	4H 7	50	43	The foundations are expected to remain serviceable for the life of the building. N capital expenses associated with this iten are expected.	0	Not Applicable	Yes	Yes	Yes	No	100	\$20 SF	\$2,000	0%	5%	5%	\$3,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 A Sub	ibstructure /	A10 Foundations	A1030 Slab on Gra	le A103001 Standard Slal on Grade	b Interior of Building At-Grade/ Slab-on-Grade	th	The floor is concrete slab-on-grade (polished concrete hroughout). Bolated hairline cracking was observed. No vielence of major settlement or heaving was reported or observed.	4	4 2011	21-Nov-17	1H 7	50	43	The concrete slab-on-grade is expected remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.		Not Applicable	Yes	Yes	Yes	No	100	\$10 SF	\$1,000	0%	5%	5%	\$2,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 B She	ell f	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	an fo No ot	The superstructure is comprised of wood framing on all four walls and roof trustes, supported on a cast-in-place concrete oundation. No settlement or other evidence of structural distress was belavered or reported. There was no evidence or reports of long- erm leakage that would allude to concealed structural damage.		4 2011	21-Nov-17	ИН 7	50	43	Interior protected structural component are expected to last the life of the building. No major capital expenditures are expected to be required.	s Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$40 SF	\$4,000	0%	5%	5%	\$5,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 B She		CB20 Exterior Enclosure	82010 Exterior Wa	ls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding		ainted cementitious siding and wood trim are present on the exterior walls.	4	4 2011	21-Nov-17	4H 7	12	5	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowand	e 3 - Future Renewal	Yes	Yes	No	No	140	\$8 SF	\$1,120	0%	15%	5%	\$2,000			\$2,000			
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 B She		CB20 Exterior Enclosure	B2010 Exterior Wa	ls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1 Pa	Vanted cementilious skiing and wood trim are present on the exterior walls.	4	4 2011	21-Nov-17	ИН 7	50	43	The cementitious siding is expected to la the life of the building. Note: isolated sealant and wood trim replacement should be completed as par of the ongoing painting.		3 - Future Renewal	Yes	Yes	No	No	140	\$35 SF	: \$4,900	0%	5%	5%	\$6,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 B She		CB20 Exterior Enclosure	82010 Exterior Wa	ls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1 Pe	Perforated metal soffit is present at the roof overhangs.	4	4 2011	21-Nov-17	4H 7	50	43	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	o Replacement	3 - Future Renewal	Yes	Yes	No	No	20	\$20 SF	\$400	0%	10%	5%	\$1,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 B She		B20 Enclosure	E2030 Exterior Doc	rs B203001 Solid Doors			One painted metal door is present on the building.	4	4 2011			30	23	Replace door at the end of its service life		3 - Future Renewal	Yes	Yes	No	No		\$500 EA		0%	5%	5%	\$1,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 B She	iell (	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1 Th	The roof is standing seam metal roof. The roof is edge drained.	4		21-Nov-17		40	33	Replace the metal roof at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations. Ongoing reviews should be completed at the pole penetration through the roof.		3 - Future Renewal	No	Yes	No	No	120	\$30 SF	\$3,600	0%	5%	5%	\$4,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 C Inte	teriors (	C30 Interior Finishes	C3010 Wall Finishe	<ul> <li>C301003 Gypsum</li> <li>Wallboard Finishes</li> </ul>	Interior/Interior Finishes	Th	The interior gypsum and plywood walls and ceilings are painted.	4	4 2011	21-Nov-17	4H 7	20	13	Repaint interiors as required. Note: a long service life has been include to reflect to building usage.	Repair Allowand	e 3 - Future Renewal	Yes	Yes	No	No	1	\$2,500 LS	\$2,500	0%	0%	5%	\$3,000						
Lambourn Estates Sewage - Sewage Treatment Plant	Sewage 80 Building	804 C Inte	teriors 6	D50 Electrical	D5020 Lighting and Branch Wiring	C301003 Gypsum Wallboard Finishes	D502002 Lighting Equipment	Ar	An exterior light is present on the building near the entrance.	4	4 2011	21-Nov-17	MH 7	20	13	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 LS	\$200	0%	0%	5%	\$1,000						



Cowichan Valley Regional District

Lambourn Estates Sewer - Water Treatment Building - Functional Code 804

Photo 1

# No cord

**Date Prepared** 

## 805 - Arbutus Mountain Estates Sewer

Infrastructure Condition Assessment and Capital Plan 1112 Fitzgerald Rd, Shawnigan Lake, BC

#### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$4,794,942	
Number of Users	121	
Replacement Cost Per User	\$39,628	
Annual Replacement Cost (40 Years)	\$56,293	per year
Annual Replacement Cost (80 Years)	\$59,197	per year
10 Year Capital Plan Total	\$100,000	
10 Year Operations and Maintenance Plan Total	\$85,000	

#### **PROPERTY DESCRIPTION**

The Arbutus Mountain Estates Sewer System started construction in 2006 and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	2006	Innova Report
Sewage Treatment Plant	2007	Record Drawing (05-131)
Lift Stations and Forcemains	2007	Record Drawing (1483)
Fitzgerald Road Collection System	2010	Record Drawing (197)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### CONTACT INFORMATION

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com July 18, 2018



July 18, 2018

Date Prepared

## 805 - Arbutus Mountain Estates Sewer

Infrastructure Condition Assessment and Capital Plan 1112 Fitzgerald Rd, Shawnigan Lake, BC

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 7, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
July 3, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New



## 805 - Arbutus Mountain Estates Sewer

Infrastructure Condition Assessment and Capital Plan 1112 Fitzgerald Rd, Shawnigan Lake, BC

Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0° i rear)	3						
	4						
Important (1 - 2 Year)	5						\$0
(1-2 (ear)	6						
Short Term	7						
(2 - 5 Year)	8						\$0
(	9						
Medium Term (5 - 10 Year)	10	1	S-STP-PTU-1	Capital Renewal	Install inlet screen (a requirement for Phase 3) and assess/inspect wastewater treatment plant, UV units, odour control system, and communication system for deterioration to determine replacement timing/phasing.	\$100,000	\$100,000
	11						
	12						
						Total	\$100,000

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical	2						\$0
(0 - 1 Year)	3						
line in a star sta	4						
Important (1 - 2 Year)	5						\$0
(1 - 2 Year)	6						
	7	2 to 4	ALL	Operations	Inspect/assess lift stations for deterioration to determine replacement timing/phasing.	\$20,000	
Short Term	8						
(2 - 5 Year)	9						\$20,000
(2 0 1001)	10						
	11						
	12						
	13	5, 6 and 15	ALL	Operations	Assess/Inspect forcemains and air relase valve chambers for deterioration to determine replacement timing/phasing.	\$35,000	
Medium Term	14	9 to 14	ALL	Operations	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows.	\$20,000	\$65,000
(5 - 10 Year)	15	17	ALL	Operations	Assess/Inspect disposal field for deterioration to determine replacement timing/phasing.	\$10,000	
	16						
	17						
						Total	\$85,000

634

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:Cowichan Valley Regional District (CVRD)System:805Arbutus Mountain Estates Sewer					Infrastructure Condition Assessment															
Civic Address:1112 Fitzgerald RdGeographic Location:South of Shawnigan LakeCustomers:Parcels:123										Total Replacement V	lue \$4,794,942									
Users: 121 Asset ID Location		Ass	set Code				Asset Inventory		Current Year 20	Total Replacement V 018 Value per user	\$39,628			Condition Assessment			Recommendations / Action Items		10 Year Capital Plan	
Function Code         Address         Location	DWG Ref Major M	Minor Spec	ID Asse	Code Phot	to Description Make	Model Material Quantity		Year Installed Year Renewed Ser	rvice Life Expectancy Est. Remainin	ng Service Life Unit Price	Replacement Value of		Functional Condition	Demand Condition	Probablity of Failure S	Severity of Failure Cond	dition Description Install inlet screen (a requirement for Phase 3) and	Type of Work		iming Comment/Question to be resolved
1     805     1112 Fitzgerald Rd     Sewage treatment plant		STP PTU		PTU-1 24 to	29 Packaged Corix sewage treatment unit	1	ea	2007	40 2	29 \$600,000	\$600,000	Fair - no inlet screen. Inlet Screen required prior to phase 3 of the development proceeding	Meets standard - there is a	an c Able to meet capacity (current flows 60	D- 2	2	<ul> <li>assess/inspect wastewater treatment plant, UV units,</li> <li>odour control system, and communication system for deterioration to determine replacement timing/phasing.</li> </ul>	Capital Renewal		10 Year
1 805 1112 Fitzgerald Rd Sewage treatment plant	Site Visit / Photos S	STP STP	2 S-STF	STP-2 2 to 5, 9, 1	12 to 29 Sewage treatment plant building	1	ea	2007	40 2	29 Refer to Arbutus Mon Estates Sewer Systen Building Condition Assessment.		Good - locked house, large windows	Meets standard						Refer to Arbutus Mountain Estates Sewer System Building Condition Assessment.	
1     805     1112 Fitzgerald Rd     Sewage treatment plant	Site Visit / Photos S	STP UV		UV-3 12 to	14 UV unit	2	ea	2007	20	9 \$10,000	\$20,000	Good	Meets standard		2	2	Assess/Inspect UV units for deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	0 Year
1	Site Visit / Photos S	STP FTR		FTR-5 10	PURAFIL Odour Control System PURAFIL	1	ea	2007	20	9 \$15,000	\$15,000	Good	Meets standard		2	2	Assess/Inspect odour control system for deterioration to determine replacement timing/phasing. Assess/Inspect communication system for	Operations	Included above 5-10	J Year
18051112 Fitzgerald RdSewage treatment plant18051112 Fitzgerald RdSewage treatment plant	Site Visit / Photos S Site Visit / Photos S						LS	2007 2007	10 ( 40 2	0 \$20,000 29 \$60,000	\$20,000	Good	Meets standard Meets standard		2	2	4 deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	) Year
	Site Visit / Photos     S       Site Visit / Photos     S       Image: Site Visit / Photos     Image: Site Visit / Photos					X2 3	ea	2007	20 9		\$45,000	Good	Meets standard			1	5 Inspect/assess lift stations for deterioration to			Year
28051112 Fitzgerald RdNW of Sewer Treatment Plant (STP)28051112 Fitzgerald RdUntreated LS		LS WW			Untreated Sanitary sewer lift station, 1800mm precast concrete manhole         Duplex pump - (4.75 impeller) 5.0 hp, 1750rpm, 575 volt. Three phase       Myers	4R x 50M4-53         1	ea	2007	40 2 20 9	29 \$300,000 9 \$5,000	\$300,000 \$10,000	Good	Meets standard Meets standard		2	3	determine replacement timing/phasing. Inspect/assess lift stations for deterioration to determine replacement timing/phasing.	Operations Operations	\$20,000 2-5 Included above 2-5	5 Year 5 Year
3   805   1112 Fitzgerald Rd   SW of Sewer Treatment Plant (STP)		LS WW		VW-14 6	Treated sanitary sewer lift station, 1800mm precast concrete manhole	1	еа	2007	40 2	29 \$300,000	\$300,000	Good	Meets standard		2	3	Inspect/assess lift stations for deterioration to determine replacement timing/phasing.	Operations	Included above 2-5	5 Year
3 805 1112 Fitzgerald Rd Treated LS	1483 S	LS PMP	15 S-LS-	MP-15 6	Duplex pump - (4.75 impeller) 7.5 hp, 575 volt. Three phase Myers	3RH x 75M2-53 2	ea	2007	20	9 \$7,500	\$15,000	Good	Meets standard		2	3	Inspect/assess lift stations for deterioration to determine replacement timing/phasing.	Operations	Included above 2-5	Year
4 805 1112 Fitzgerald Rd Shawnigan lake rd 0+988.5		LS WW	17 S-LS-	VW-17 NA	Wastewater lift station, el. = 191.649	1	ea	2006	40 2	28 \$500,000	\$500,000				2	3	Inspect/assess lift stations for deterioration to determine replacement timing/phasing.	Operations	Included above 2-5	Year
5 805 1112 Fitzgerald Rd Shawnigan lake rd 0+988.5 to 1+000		FM PP		PP-19	Forcemain pipe, 150mm	Series 160 PVC 12	m	2006	80 6	68 \$500	\$6,000				1	3	Assess/Inspect forcemains and air relase valve chambers for deterioration to determine replacement timing/phasing.	Operations	\$35,000 5-10	10 Year
5 805 1112 Fitzgerald Rd Shawnigan lake rd 1+000 to 2+050		FM PP		PP-18	Forcemain pipe, 150mm, min 1.2m depth	DR 17 HDPE 1050	m	2006	80 6	68 \$500	\$525,000				1	3	Assess/Inspect forcemains and air relase valve chambers for deterioration to determine replacement	Operations	Included above 5-10	.0 Year
5     805     1112 Fitzgerald Rd     Shawnigan lake rd 2+050 to 2+160		FM PP		PP-24	Forcemain pipe, 150mm, min 1.2m depth	DR 11 HDPE 110	m	2006	80 6	68 \$500	\$55,000				1	3	4 timing/phasing. 4 Assess/Inspect forcemains for deterioration to determine replacement timing/phasing. Assess/Inspect air release valve chambers for	Operations	Included above 5-10	0 Year
5 805 1112 Fitzgerald Rd Shawnigan lake rd 1+070		FM VAL		VAL-20	Air Release/Vacuum Valve, high point = 200.558	101.S 1	ea	2006	40 2	28 \$5,000	\$5,000				2	2	Assess/Inspect air release valve chambers for deterioration to determine replacement timing/phasing. Assess/Inspect air release valve chambers for	Operations	Included above 5-10	J Year
5 805 1112 Fitzgerald Rd Shawnigan lake rd 1+310.0		FM VAL			Air Release valve, el. = 186.280	201.C.2 1	ea	2006	40 2	28 \$5,000	\$5,000				2	2	4 deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	) Year
58051112 Fitzgerald RdShawnigan lake rd 1+560.058051112 Fitzgerald RdShawnigan lake rd 2+050.0	1483 S	FM VAL FM VAL	23 S-FM	VAL-22 VAL-23	Line Valve Assembly, el. = 170.194 Line Valve Assembly, el. = 134.431 (pipe change)		ea	2006 2006	40 2 40 2	28 \$5,000 28 \$5,000	\$5,000					2	5 5 Among // and a ferror and a involved up to the			- Year
6 805 1112 Fitzgerald Rd Sooke lake rd 2+160 to 2+810		FM PP		PP-25	Forcemain pipe, 150mm, min 1.2m depth	DR 11 HDPE 650	m	2006	80 6	68 \$500	\$325,000				1	3	Assess/Inspect forcemains and air relase valve chambers for deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	0 Year
6 805 1112 Fitzgerald Rd Sooke lake rd 2+810 to 3+741		FM PP			Forcemain pipe, 150mm, min 1.2m depth	DR 17 HDPE 931	m	2006	80 6	68 \$500	\$465,500				1	3	Assess/Inspect forcemains and air relase valve chambers for deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	0 Year
68051112 Fitzgerald RdSooke lake rd 2+35768051112 Fitzgerald RdSooke lake rd 2+810	1483 S 1483 S				Blow down / flush valve assembly. El. = 122.492 (low point)         Line valve assembly, el. = 135.317 (pipe change)		ea ea	2006 2006	40     2       40     2	28 \$5,000 28 \$5,000	\$5,000 \$5,000				1 1	2 2	5 5 5 Assess/Inspect air release valve chambers for		10+ 10	Year - Year
6 805 1112 Fitzgerald Rd Sooke lake rd 2+850		FM VAL		VAL-28	Air vacuum valve model, el. = 137.498	100.S 1	ea	2006	40 2	28 \$5,000	\$5,000				2	2	4deterioration to determine replacement timing/phasing.Assess/Inspect air release valve chambers for	Operations	Included above 5-10	) Year
6 805 1112 Fitzgerald Rd Sooke lake rd 3+020		FM VAL			Air vacuum valve model, el. = 145.563	100.S 1	ea	2006	40 2	28 \$5,000	\$5,000				2	2	4       deterioration to determine replacement timing/phasing.         Assess/Inspect air release valve chambers for	Operations	Included above 5-10	) Year
6 805 1112 Fitzgerald Rd Sooke lake rd 3+485		FM VAL		VAL-30	Air release/vacuum and Line Valve assembly	101.S 1	ea	2006	40 2	28 \$5,000	\$5,000				2	2	4deterioration to determine replacement timing/phasing.Assess/Inspect air release valve chambers for	Operations	Included above 5-10	10 Year
68051112 Fitzgerald RdSooke lake rd 3+58568051112 Fitzgerald RdSooke lake rd 3+741		FM VAL FM VAL			Air release valve, el. = 176.103         Line valve assembly, el. = 158.302	201.C.2 1 1	ea ea	2006	40 2 40 2	28 \$5,000 28 \$5,000	\$5,000				2 1	2	<ul> <li>deterioration to determine replacement</li> <li>timing/phasing.</li> </ul>	Operations	Included above 5-10	) Year + Year
78051112 Fitzgerald RdFitzgerald rd SMH E to SCO A78051112 Fitzgerald RdFitzgerald rd78051112 Fitzgerald RdFitzgerald rd78051112 Fitzgerald RdFitzgerald rd	197         S           197         S           197         S           197         S           197         S	SS MH	78 S-SS-	-80 V-81 /H-78	Sewermain pipe, 150mm Service lines (approx. 4m per line) SMH E	PVC 35 10 1		2010 2010 2010 2010	80 7 80 7 40 3	72         \$500           72         \$3,000           32         \$8,000	\$17,500 \$30,000 \$8,000					2 2 2 2 2 2	5 <b>6 6 7 7 7 7 7 7 7 7 7 7</b>		10- 10 10	- Year - Year - Year
7       805       1112 Fitzgerald Rd       Fitzgerald rd         8       805       1112 Fitzgerald Rd       Skylar Cir. Ex. SMH to SMH A         8       805       1112 Fitzgerald Rd       Skylar Cir. SMH A to SMH B         9       805       1112 Fitzgerald Rd       Skylar Cir. SMH A to SMH B	197 S 197 S	SS CO SS S SS S	102 S-SS- 103 S-SS-	-102 -103	200mm Sewermain, 2.5m depth 200mm Sewermain, 2.5m depth 200mm Sewermain, 2.5m depth	1 10 17	ea m m	2010 2011 2011 2011	40 3 80 7 80 7	32     \$2,000       73     \$550       73     \$550       73     \$550       73     \$550	\$2,000 \$5,500 \$9,350					2 2 2 2	5 5 5 5		10+ 10 10	+ Year + Year
88051112 Fitzgerald RdSkylar Cir. SMH B to SMH C88051112 Fitzgerald RdSkylar Cir. SMH C to SMH D88051112 Fitzgerald RdSkylar Cir. SMH D to SMH E	197 S 197 S	SS S	105 S-SS- 106 S-SS-	-105 -106	200mm Sewermain, 2.5m depth         200mm Sewermain, 2.5m depth         200mm Sewermain, 2.5m depth	16           12           123	m m m	2011       2011       2011	80 7 80 7 80 7 80 7	73         \$550           73         \$550           73         \$550	\$8,800 \$6,600 \$67,650				1 1 1 1	2 2 2 2	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		10+ 10 10	Year - Year - Year
88051112 Fitzgerald RdSkylar Cir. SMH E to SMH F188051112 Fitzgerald RdSkylar Cir. SMH F1 to SMH F88051112 Fitzgerald RdSkylar Cir. SMH F to SMH G	197 S	SS S	109 S-SS-		200mm Sewermain, 2.5m depth200mm Sewermain, 2.5m depth200mm Sewermain, 2.5m depth	97 16 88		2011       2011       2011	80         7           80         7           80         7           80         7	73     \$550       73     \$550       73     \$550       73     \$550	\$53,350 \$8,800 \$48,400				1 1 1	2 2 2 2	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		10+ 10 10	Year - Year + Year
88051112 Fitzgerald RdSkylar Cir. SMH G to SMH H88051112 Fitzgerald RdSkylar Cir. SMH H to SMH I88051112 Fitzgerald RdSkylar Cir88051112 Fitzgerald RdSkylar Cir 60+00.0	107 S	2 22	110 5-55-	-110	200mm Sewermain, 2.5m depth         200mm Sewermain, 2.5m depth         Service lines (approx. 3m per line)         Existing SMH	6           80           45           1		2011       2011       2010       2006	80         7           80         7           80         7           40         2	73         \$550           73         \$550           72         \$3,000           28         \$8,000	\$3,300 \$44,000 \$135,000 \$8,000				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 2 2 2 2 2 2	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		10+ 10 10 10	Year Year Year Year
8         805         1112 Fitzgerald Rd         Skylar Cir 60+10.0           8         805         1112 Fitzgerald Rd         Skylar Cir 60+27.6           8         805         1112 Fitzgerald Rd         Skylar Cir 60+43.1           8         805         1112 Fitzgerald Rd         Skylar Cir 09+97.6	197         S           197         S           197         S           197         S           197         S           197         S	SS MH SS MH SS MH SS MH	91         S-SS-           92         S-SS-           93         S-SS-           94         S-SS-	ЛН-91 ЛН-92 ЛН-93 ЛН-94	SMH A         SMH B, 1200mm diameter         SMH C         SMH D	1           1           1           1           1           1	ea e	2011       2011       2011       2011	40         3           40         3           40         3           40         3           40         3	33     \$8,000       33     \$8,000       33     \$8,000       33     \$8,000       33     \$8,000	\$8,000 \$8,000 \$8,000 \$8,000				1       1       1       1       1	2 2 2 2 2 2 2 2	5 S S S S S S S S S S S S S S S S S S S		10+ 10- 10 10	Year Year Year Year Year
8         805         1112 Fitzgerald Rd         Skylar Cir 11+19.8           8         805         1112 Fitzgerald Rd         Skylar Cir 12+16.5           8         805         1112 Fitzgerald Rd         Skylar Cir 12+32.7           8         805         1112 Fitzgerald Rd         Skylar Cir 13+20.5           8         805         1112 Fitzgerald Rd         Skylar Cir 13+20.5	197         S           197	SSMHSSMHSSMH	95         S-SS-           96         S-SS-           97         S-SS-           98         S-SS-	лп-эээ ЛН-96 ЛН-97 ЛН-98 ЛН-98	SMH E, rim elevation = 217.20         SMH F1, rim elevation = 218.38         SMH F, rim el. = 218.57         SMH G, rim el. = 219.67	1           1           1           1           1           1           1	ea ea ea ea	2011       2011       2011       2011       2011	40     3       40     3       40     3       40     3       40     3	33     \$8,000       33     \$8,000       33     \$8,000       33     \$8,000       33     \$8,000       33     \$8,000	\$8,000 \$8,000 \$8,000 \$8,000 \$8,000				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 2 2 2 2 2 2	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		10+ 10- 10 10	Year + Year
88051112 Fitzgerald RdSkylar Cir (unnamed road) 40+10.088051112 Fitzgerald RdSkylar Cir (unnamed road) 40+90.3		SS MH SS MH		אות-99 /IH-101	SMH H, rim el. = 219.44         SMH I, rim el. = 223.68		ea ea	2011 2011	40 3 40 3	33 \$8,000 33 \$8,000	\$8,000 \$8,000					2	5 Access /Inspect comparing for datastration i			Year
9 805 1112 Fitzgerald Rd EASTON PLACE	GIS	SS S		-112	Sewermain, 200mm	93		2006	80 6	68 \$550	\$51,285				2	2	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows. Assess/Inspect forcemains and air relase valve	Operations	\$20,000 5-10	10 Year
10     805     1112 Fitzgerald Rd       10     805     1112 Fitzgerald Rd	GIS	FM PP			Forcemain, 150mm (includes 80m unknown diameter)	86		2006	80 6	68 \$500 68 \$500	\$43,009 \$19,930				1	3	Assess/Inspect forcemains and air relase value chambers for deterioration to determine replacement timing/phasing. Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review	Operations Operations	Included above 5-10 Included above 5-10	10 Year
10     805     1112 Fitzgerald Rd     FITZGERALD ROAD       10     805     1112 Fitzgerald Rd     FITZGERALD ROAD	GIS	SS S			Sewermain, 150mm (GIS minus catalogued length from 197)	40	m	2006	80 6	68 \$550 68 \$550	\$19,930 \$239,373				2	2	<ul> <li>determine replacement timing/phasing. Review sources of I&amp;I to reduce peak flows.</li> <li>Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&amp;I to reduce peak flows.</li> </ul>	Operations	Included above 5-10 Included above 5-10	
Image: Fitzgerald ROAD       11     805       1112 Fitzgerald Rd       KRISTIN WAY		SS S		-116	Sewermain, 200mm (includes 3m unknown diameter)	66		2006	80 6	68 \$550	\$36,078				2	2	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows.	Operations	Included above 5-10	.0 Year
12     805     1112 Fitzgerald Rd     LISA CLOSE	GIS	SS S	117 S-SS-	-117	Sewermain, 200mm			2006	80 6	68 \$500	\$33,437				2	2	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows.	Operations	Included above 5-10	.0 Year
12     805     1112 Fitzgerald Rd     LISA CLOSE	GIS	SS S	118 S-SS-	-118	Sewermain, 150mm Sewermain, 200mm	63	m	2006	80 6	68 \$550	\$34,736				2	2	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows.	Operations	Included above 5-10	0 Year
13     805     1112 Fitzgerald Rd       SHAWNIGAN LAKE ROAD	GIS	SS S	119 S-SS-	-119	Sewermain, 200mm	17	m	2006	80 6	68 \$550	\$9,245				2	2	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows.	Operations	Included above 5-10	0 Year
14     805     1112 Fitzgerald Rd       SKYLAR CIRCLE	GIS	SS S	120 S-SS-	-120	Sewermain, 200mm (includes 39m unknown diameter) (GIS minus catalogued length from 197)	7	m	2006	80 6	68 \$550	\$4,098				2	2	Assess/Inspect sewermains for deterioration to determine replacement timing/phasing. Review sources of I&I to reduce peak flows.	Operations	Included above 5-10	0 Year
15 805 1112 Fitzgerald Rd SOOKE LAKE ROAD	GIS	FM PP		PP-121	Forcemain, 150mm (GIS minus catalogued length from Sooke lake rd and Shawnigan lake rd from 1483)	0	m	2006	80 6	68 \$500	\$0				1	3	Assess/Inspect forcemains and air relase valve chambers for deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	0 Year
168051112 Fitzgerald RdEntire system168051112 Fitzgerald RdEntire system		SS SV SS MH		V-122 /H-189	Service Connections, Sewer (GIS minus catalogued length from 197)         Sewer manholes (minus catalogued length from record drawings)	67 10	ea ea	2006 2006 2006 2006 2006 2006 2006 2006	80 66 40 2	68 \$3,000 28 \$8,000	\$201,000 \$80,000				1 1	2 2 2	5 5		10 10	- Year + Year
17   805   1112 Fitzgerald Rd   Entire system		STP DF			Disposal field sewer discharge	1	еа	2006	40 2	28 \$150,000	\$150,000				2	2	4 Assess/Inspect disposal field for deterioration to determine replacement timing/phasing.	Operations	\$10,000 5-10	. <mark>O Year</mark>
17 805 1112 Fitzgerald Rd Entire system		STP DF #		#REF!	Disposal field building	1	еа	2006	40 2	28 \$40,000	\$40,000				2	2	Assess/Inspect disposal field for deterioration to determine replacement timing/phasing.	Operations	Included above 5-10	J Year
I		I	I	I		<u> </u>	1	I			I	[	I						I	I

6		
SEWAG	E TREATMENT PLANT	MORRISON HERSHFIELD
SYSTEM:	Arbatus Mith Estates	DATE: Nor 23/17
LOCATION: SYSTEM	805	PROJECT No.: 5170700
CODE: INSPECTED BY		CVRD STAFF PRESENT:
	atment System (Schematic)	Class 1, Div 1 Plat
		and the second
2) Site Conditio	ons/Security	the second s

805 (1)



**805 (2)** 1 of 15



805 (3)



**805 (4)** 2 of 15



805 (5)



**805 (6)** 3 of 15



805 (7)



**805 (8)** 4 of 15



805 (9)



**<sup>805 (10)</sup>** 5 of 15



805 (11)



**805 (12)** 6 of 15



805 (13)



**805 (14)** 7 of 15



805 (15)



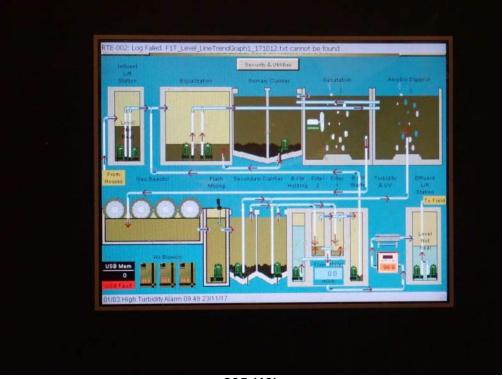
**805 (16)** 8 of 15



805 (17)



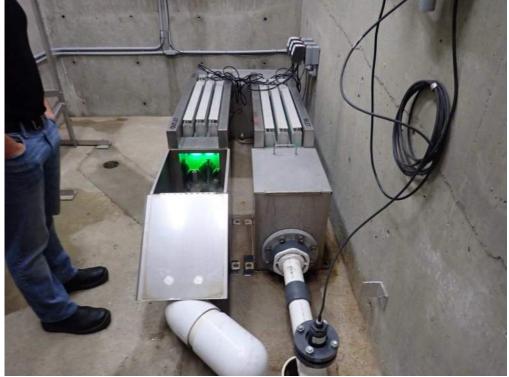
**805 (18)** 9 of 15



805 (19)



**805 (20)** 10 of 15



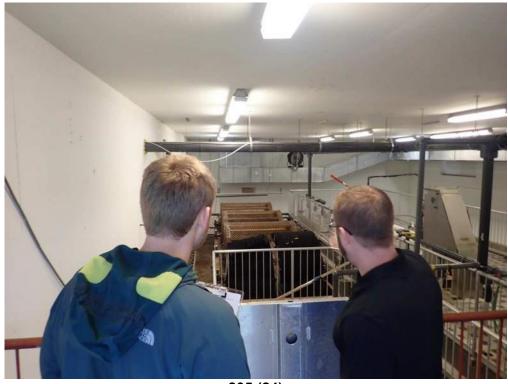
805 (21)



**805 (22)** 11 of 15



805 (23)



**805 (24)** 12 of 15



805 (25)



**805 (26)** 13 of 15



805 (27)



**805 (28)** 14 of 15

805 (29)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Arbutus Mountain Heights - Sewage Treatment Building - Functional Code 805

		dno		<u>ज</u>	COM	MPONENT		CONDITION ASSESSMENT							LIFECYCLE DA	TA	RECOMMENT	DATION			If recommended					ОР	PINION OF PR	ROBABLE C	COST		
3 Name G Type	ion Code	1 Major Gα Elements	vel 2 Group Elements	Individu ments		/ Type			ion	ance	ır Last ction	nt Date	id By	2018	al le or terval	me ng to Aajor on			Ā	Can this work be phased over	rate of	this system lead	condition adversely affect	iity	ate	tal	' or ment t	łł.	gency	5%	2017 Irs
BLDC	Funct	.evel 1 N	Level	Level 3 Ind Elemer		ocation .	Photo	Description & History	Condit	Perform	rr New o Major A	ssessmei	Assesse	Age in 2	Typical Life Cycle or Action Interval	Est. Ti Remaini EOL or N Actic	Recommendation	Тур	Priori	multiple years ?	deterioration be expected to increase ?	to a loss of use of the facility ?	the buildings security of safety ?	Quant	Unit R	Subto	Replacer Cos	Consu	Contin-£	Тах	Total in 201 Dollars
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations		The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	5	5	2008	< 21-Nov-17	МН	10	50	40	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	3500	\$20	SF \$	70,000	0%	10%	5%	\$81,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	1 & 2	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5	2008	21-Nov-17	мн	10	50	40	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	3500	\$10	SF \$	35,000	0%	10%	5%	\$41,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains		Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5	5	2008	21-Nov-17	МН	10	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500	LS	\$500	0%	0%	5%	\$1,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains	1 & 2	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5	5	2008	21-Nov-17	МН	10	50	40	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A133006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No								
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	B10 Superstructure	B10 Superstructur	B10 Superstructure	Interior of Building/ General Superstructure		The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5	5	2008	21-Nov-17	МН	10	50	40	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	220	\$40	SF \$	\$8,800	0%	10%	5%	\$11,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	Ils B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1&2	Painted cementitious siding and wood trim are present on the exterior walls.	4	4	2008	21-Nov-17	МН	10	12	2	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	3200	\$2	SF \$	\$6,400	0%	15%	5%	\$8,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	Ills 8201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	1&2	Painted cementitious siding and wood trim are present on the exterior walls.	5	5	2008	21-Nov-17	мн	10	50	40	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	3200	\$35	SF \$1	112,000	0%	5%	5%	\$124,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	Ills B201001 Exterior Enclosure	Exterior Walls/ Soffit	1&2	Perforated metal soffit is present at the roof overhangs.	5	5	2008	21-Nov-17	МН	10	50	40	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	300	\$15	SF \$	\$4,500	0%	10%	5%	\$6,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	IIIs B201005 Exterior Louvers and Screens	Exterior Walls/Vent Louver	1 & 2	A metal louver vent is present on the exterior wall.	5	5	2008	21-Nov-17	мн	10	30	20	Replace the louver vent at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	EA	\$200	0%	10%	5%	\$1,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	B20 Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/ Door	1&2	Vinyl windows are present throughout the building.	5	5	2008	21-Nov-17	МН	10	25	15	Replace vinyl windows at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	5	\$250	EA Ş	\$1,250	0%	5%	5%	\$2,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1 & 2	Four painted metal doors (three single and one double) are present on the building.	5	5	2008	21-Nov-17	МН	10	30	23	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	4	\$1,500	EA \$	\$6,000	0%	5%	5%	\$7,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly		The is a sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5	5	2008	21-Nov-17	мн	10	25	15	Replace the roofing at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	4000	\$5	SF \$	20,000	0%	5%	5%	\$23,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly		The is a sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5	5	2008	21-Nov-17	мн	10	25	18	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	240	\$10	SF \$	\$2,400	0%	10%	5%	\$3,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	C Interiors	C30 Interior Finishes	C3010 Wall Finish	es C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	3	The interior gypsum and plywood walls and ceilings are painted.	5	5	2008	21-Nov-17	МН	10	20	10	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$2,500	LS Ş	\$2,500	0%	0%	5%	\$3,000
Arbutus Mountain Sewage Heights - Sewage Treatment Treatment Building Building	805	C Interiors	D50 Electrical	D5020 Lighting an Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	5	5	2008	21-Nov-17	MH	10	20	10	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	LS	\$500	0%	0%	5%	\$1,000

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Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Arbutus Mountain Heights - Sewage Treatment Building - Functional Code 805

		ę	ents	-	C	COMPONENT		CONDITION ASSESSMENT					LIFECYCLE DATA	RECOMME	NDATION			If recommende	ed				OPINION O	OF PROBABLE (	COST		10-YEA	R CAPITAL PL	AN			
Name	i Type on Code	ajor Gro	up Elem	ndividua		Type			ы В	Last tion	t Date	318	l tor te te to EOL	ction		~	Can this work be	work not complete can th rate of	Will a failure in this system lead to a loss of use o the facility ?	Can the current condition adversely affect	t + ≥	2	al or rt Cost	د.	sucy.	017 \$	2018	2019	2020 2021	2022 2023	2024 20	025 2026 2027
9018	BLDG Functio	Level 1 Mi	Level 2 Grou	Level 3 India Element		Location /	Phot	Description & History	Conditi	Yr New or Major Ac	Assessment Assessed	Age in 20	Typical Life Cycle or Action Interval Est. Time Est. Time	⊄ § Recommendation ₽ 5 5	Type	Priorit	multiple years ?	deterioration b expected to increase ?	to a loss of use o the facility ?	f the buildings security of safety	E S	Unit Ka	Subtota Repair ( teplacemen	Consul	Contin Contin Contin	Total in 2017 Dollars	\$0	\$1,000	\$0 \$0	\$8,000 \$0	\$0 \$	\$0 \$0 \$4,000
Arbutus Mountain Sewa Heights - Sewage Trea Freatment Building Build	tment	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Founda	tions 1&2	The foundation is comprised of cast-in-place concrete footings with concrete foundation walk. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	5 5	2008	21-Nov-17 MH	10	50 40	The foundations are expected to remain serviceable for the life of the building, capital expenses associated with this ite are expected.	n Not Applicable No em	Not Applicable	Yes	Yes	Yes	No	3500 \$:	20 SF	\$70,000	0%	10% 59	\$81,000						
Arbutus Mountain Sewa Heights - Sewage Trea Freatment Building Build	tment	A Substructure	A10 Foundations	A1030 Slab on Grac	e A103001 Standard S on Grade	lab Interior of Building At-O Slab-on-Grade	Grade/ 1&2	The floor is concrete slab-on-grade (polished concrete throughout), isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5 5	2008	21-Nov-17 MH	10	50 40	The concrete slab-on-grade is expected remain serviceable for the life of the building, with isolated repairs, if needer No capital expenses associated with thi item are expected.	d.	Not Applicable	Yes	Yes	Yes	No	3500 \$	10 SF	\$35,000	0%	10% 59	\$41,000						
Arbutus Mountain Sewa Heights - Sewage Trea Treatment Building Build	tment	A Substructure	A10 Foundations	A1030 Slab on Grac	e A103006 Foundation Drainage	n Underground/ Perimet Drains	ter 1&2	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2008	21-Nov-17 MH	10	10 2	Periodic camera inspection and isolatec repairs as required.	i Study	Not Applicable	No	N/A	No	N/A	1 \$5	600 LS	\$500	0%	0% 59	\$1,000		\$1,000				
Arbutus Mountain Sewi Heights - Sewage Trea Treatment Building Build	tment	A Substructure	A10 Foundations	A1030 Slab on Grae	le A103006 Foundation Drainage	a Underground/ Perimet Drains	ter 1&2	Permeter drain pipes are assumed to be installed at the footing werk. No issue: related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2008	21-Nov-17 MH	10	50 40	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage revi recommended in A103006 Foundation Drainage (above).	żw	3 - Future Renewal	N/A	N/A	No	No												
Arbutus Mountain Sewa Heights - Sewage Trea Freatment Building Build	tment	B Shell	B10 Superstructur	e B10 Superstructure	B10 Superstructure	Interior of Building/ Ge Superstructure	eneral 1&2	The superstructure is comprised of avoid framing on all four walls and not frustes, supported on a casi-in place concrete foundation. No settlement or other evidence of structural distress was observed or report. Here was no evidence or reports of long- term fieldage that would allude to conceiled structural damage.	5 5	2008	21-Nov-17 MH	10	50 40	Interior protected structural componer are expected to last the life of the building. No major capital expenditure are expected to be required.	nts Not Applicable	Not Applicable	Yes	Yes	Yes	No	220 \$-	40 SF	\$8,800	0%	10% 59	\$11,000						
Arbutus Mountain Sewa Heights - Sewage Trea Freatment Building Build	tment	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/ Cement Siding	titious 1&2	Painted cementitious siding and wood trim are present on the exterior walls.	4 4	2008	21-Nov-17 MH	10	12 2	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowan	e 3 - Future Renewal		Yes	No	No	3200 \$	i2 SF	\$6,400	0%	15% 59	\$8,000				\$8,000		
Arbutus Mountain Sew Heights - Sewage Trea Freatment Building Build	tment	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/ Cement Siding	titious 1&2	Painted comentilious siding and wood trim are present on the exterior walls.	5 5	2008	21-Nov-17 MH	10	50 40	The cementitious siding is expected to the life of the building. Note: isolated sealant and wood trim replacement should be completed as po of the ongoing painting.		3 - Future Renewal		Yes	No	No	3200 \$:	35 SF	\$112,000	0%	5% 59	\$ \$124,000						
Arbutus Mountain Sewa Heights - Sewage Trea Freatment Building Build	tment	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	Is B201001 Exterior Enclosure	Exterior Walls/ Soffit	1&2	Perforated metal soffit is present at the roof overhangs.	5 5	2008	21-Nov-17 MH	10	50 40	The perforated metal soffit is expected last the life of the building. No capital expenses associated with this item are expected.	to Replacement	3 - Future Renewal	Yes	Yes	No	No	300 \$	15 SF	\$4,500	0%	10% 59	\$6,000						
Arbutus Mountain Sewa Heights - Sewage Trea Treatment Building Build	tment	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	Is B201005 Exterior Louvers and Screens	Exterior Walls/Vent Los	uver 1&2	A metal lower vent is present on the exterior wall.	S S	2008	21-Nov-17 MH	10	30 20	Replace the louver vent at the end of it service life.	s Replacement	3 - Future Renewal	Yes	Yes	No	No	1 \$2	100 EA	\$200	0%	10% 59	\$1,000						
Arbutus Mountain Sewa Heights - Sewage Trea Treatment Building Build	tment	B Shell	B20 Enclosure	82020 Exterior Windows	8202001 Windows	Exterior Walls/ Door	1&2	Vinyl windows are present throughout the building.	5 5	2008	21-Nov-17 MH	10	25 15	Replace vinyl windows at the end of the service life.	eir Replacement	3 - Future Renewal		Yes	No	No	5 \$2	!50 EA	\$1,250	0%	5% 59	\$2,000						
Arbutus Mountain Sewa Heights - Sewage Trea Treatment Building Build	tment	B Shell	B20 Enclosure	E2030 Exterior Doo	rs 8203001 Solid Doors	s Exterior Walls/ Door	182	Four painted metal doors (three single and one double) are present on the building.	S S	2008	21-Nov-17 MH	10	30 23	Replace doors at the end of their servic life.	e Replacement	3 - Future Renewal		Yes	No	No	4 \$1,	500 EA	\$6,000	0%	5% 59	\$7,000						
Arbutus Mountain Sew Heights - Sewage Trea Freatment Building Build	tment	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Asse	embly 1&2	The is a sloped assembly with asphalt shingles. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5 5	2008	21-Nov-17 MH	10	25 15	Replace the roofing at the end of its service life. Ongoing maintenance of the roof shoul include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	4000 S	5 SF	\$20,000	0%	5% 59	\$\$23,000						
Arbutus Mountain Sew. Heights - Sewage Trea Freatment Building Build	tment	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings			The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5 5		21-Nov-17 MH		25 18	life.		3 - Future Renewal		Yes	No	No	240 \$:	10 SF	\$2,400	0%	10% 59							
Arbutus Mountain Sew Heights - Sewage Trea Freatment Building Build	tment	C Interiors	C30 Interior Finish	es C3010 Wall Finishe:	G301003 Gypsum Wallboard Finishes	Interior/Interior Finish	es 3	The interior gypsum and plywood walls and ceilings are painted.	5 5	2008	21-Nov-17 MH	10	20 10	Repaint interiors as required. Note: a long service life has been includ to reflect to building usage.	Repair Allowan	3 - Future Renewal		Yes	No	No	1 \$2;	500 LS	\$2,500	0%	0% 59	\$3,000						\$3,000
Arbutus Mountain Sewa Heights - Sewage Trea Freatment Building Build	tment	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equip	ment	An exterior light is present on the building near the entrance.	5 5	2008	21-Nov-17 MH	10	20 10	Replace lights at the end of their service life.	e Replacement	3 - Future Renewal	Yes	Yes	No	No	1 \$5	i00 LS	\$500	0%	0% 59	\$1,000						\$1,000



Cowichan Valley Regional District

Arbutus Mountain Heights - Sewage Treatment Building - Functional Code 805

Photo 1



Photo 2

Cowichan Valley Regional District

Arbutus Mountain Heights - Sewage Treatment Building - Functional Code 805



Photo 3



### 809 - Cobble Hill Sewer

Infrastructure Condition Assessment and Capital Plan 1532 Gallier Rd, Cobble Hill, BC

### **PROPERTY STATISTICS AND REPORT SUMMARY**

System Replacement Cost Estimate	\$1,492,455	
Number of Users	84	
Replacement Cost Per User	\$17,767.32	
Annual Replacement Cost (40 Years)	\$14,732	per year
Annual Replacement Cost (80 Years)	\$18,425	per year
10 Year Capital Plan Total	\$400,000	
10 Year Operations and Maintenance Plan Total	\$15,000	

### **PROPERTY DESCRIPTION**

The Cobble Hill Sewer system was constructed in 1993 and includes the phases outlined in the table below.

Development	Year Installed	Source
Original System	1993	Innova Report
STP Improvements	2009	Record Drawing (11310)

### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

### **CONTACT INFORMATION**

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com



# 809 - Cobble Hill Sewer

Infrastructure Condition Assessment and Capital Plan 1532 Gallier Rd, Cobble Hill, BC

Date Prepared

July 18, 2018

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided
March 2, 2018	Caleb Light	access to each system. Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 2, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
July 3, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New

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Date Prepared July 18, 2018

# **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

### Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical	2						\$0
(0 - 1 Year)	3						
Important	4	1 and 2	ALL	Capital Upgrade/New	Secure funding to connect STP to Twin Cedar System. Decommission existing STP once connected to Twin Cedar System.	\$400,000	\$400,000
(1 - 2 Year)	5						1 ,
	6						
Short Term	7						
(2 - 5 Year)	8						\$0
(2 - 5 fear)	9						
	10						
Medium Term	11						\$0
(5 - 10 Year)	12						
						Total	\$400,000

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
- · · · ·	1						
Critical	2						\$0
(0 - 1 Year)	3						
	4						
Important	5						\$0
(1 - 2 Year)	6						
	7						
	8						
Short Term	9						\$0
(2 - 5 Year)	10						ŞΟ
	11						
	12						
	13	3 to 9	ALL	Operations	Assess/Inspect sewermains, manholes, and cleanouts for deterioration to determine replacement timing/phasing.	\$15,000	
Medium Term	14						
(5 - 10 Year)	15						\$15,000
	16						
	17						

			Total	\$15,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:	Cowichan Valley Regio	onal District (CVRD)							
System:	809	Cobble Hill Sewer							
Civic Address:	1532 Gallier Rd								
Geographic Location:	North of Cobble Hill Village								
Customers:	Parcels:	84							
	Users: 84								

Infrastructure Condition Assessment

Asset ID		Location				Asset Code					Asset Invento	ory						Condition Assessment		Recommendations / Action Items	10 Year Ca	pital Plan
	Function Cod	de Address	Location	DWG Ref	Major Min	or Spec ID Asset Code	Photo	Description	Make Model	Material	Quantity Quantity Uni	it Year Installed Yea	r Renewed Service Life Expectancy	Est. Remaining Service Li	e Unit Price	Replacement Value of As	set Physical Condition		on Probablity of Failure Severity of Failure Cond		Type of Work Budget	Estimate Timing Comment/Question to be resolved
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P CC 1 S-STP-CC-1	9, 10	Precast Spitter Box c/w pipe assembly		Concrete	1 ea	2009	40	31	\$10,000	\$10,000			1 2 5			10+ Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P STP 2 S-STP-STP-2	2 to 22	Sewage Treatment Plant building		Wood/concrete	1 ea	2009	40	31	Refer to Cobble Hill Sewer S	System Building Condition Asses	sment Poor - gated	Does not meet standard Odour issues, no ventilation, bearing	gs are failing		Refer to Co	bble Hill Sewer System Building Condition Assessment.
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P ET 3 S-STP-ET-3	7, 11	3560 Gal. precast Trash Tank c/w pipe assembly (#1 and #2)		Concrete	2 ea	2009	40	31	\$40,000	\$80,000			4 3 2	Secure funding to connect STP to Twin Cedar		),000 <b>1-2 Year</b>
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P ET 5 S-STP-ET-5	7, 11	3560 Gal. Primary Equalization tank (#3)		Concrete	1 ea	2009	40	31	\$40,000	\$40,000			2 2 4	Secure funding to connect STP to Twin Cedar		d above 5-10 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P ET 6 S-STP-ET-6	7, 11	3560 Gal. Precast Secondary Equalization tank c/w pipe assembly (#4)		Concrete	1 ea	2009	40	31	\$40,000	\$40,000			2 2 4	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 5-10 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P ET 7 S-STP-ET-7	7, 11	3560 Gal. Precast Overflow/Equalization tank (#5)		Concrete	1 ea	2009	40	31	\$40,000	\$40,000			2 2 4	Secure funding to connect STP to Twin Ceda		d above 5-10 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P COM 8 S-STP-COM-8	14 to 16	Control Panel c/w elec. Conduit			1 LS	2009	10	1	\$20,000	\$20,000	Poor	Does not meet standard	3 3	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 2-5 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310		P STP 9 S-STP-STP-9	4 to 6, 8	Existing Treatment Plant (no spec data)		Wood/Sheet metal roof	f 1 ea	1993	40	15	\$150,000	\$150,000			1 1 5	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 10+ Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P FTR 10 S-STP-FTR-10	12, 13	Sand Filter c/w pipe assembly		Sand/Steel	1 ea	2009	20	11	\$25,000	\$25,000	Offline - never been used	Does not meet standard Offline - never been used	5 2 2			d above 1-2 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P FTR 11 S-STP-FTR-11	3, 11	1200 Gal. 1.8m Diameter Water Tank		Polyethylene	1 ea	2009	20	11	\$10,000	\$10,000	Offline - never been used	Does not meet standard Offline - never been used	5 2 2	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 1-2 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P         PMP         12         S-STP-PMP-12           P         PMP         13         S-STP-PMP-13	NA	Sludge pump (housed in Treatment Plant)			1 ea	2009	20	11	\$5,000	\$5,000	Poor	Does not meet standard Motor issues	3 2 3	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 2-5 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P PMP 13 S-STP-PMP-13	NA	Submersible Sewage Pump c/w 50mm NPT outlet and lifting chain	Barnes 25E-564L		2 ea	2009	20	11	\$5,000	\$10,000			1 1 9	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 10+ Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	11310	S STF	P FTR 15 S-STP-FTR-15	5, 17, 18	Bio-filter chamber		Wood	1 ea	2009	0	0	\$10,000	\$10,000	Poor - odour complaints	Does not meet standard Does not work	4 2 3	Secure funding to connect STP to Twin Ceda		d above 2-5 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant		S STF	P BLW 16 S-STP-BLW-16	5, 17, 18	Blower #1 and #2			2 ea	2009	0	0	\$5,000	\$10,000	Poor	Does not meet standard Does not work	4 2 3	Secure funding to connect STP to Twin Ceda		d above 2-5 Year
1	809	1532 Gallier Rd	Wastewater Treatment Plant	Site Visit / Photos	os S STF	P FM 18 S-STP-FM-18	19, 20	Flow meter			2 ea	2009	20	11	\$5,000	\$10,000			1 1 9	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 10+ Year
2	809	1532 Gallier Rd	Wastewater Treatment Plant	Site Visit / Photos	os S STF	P DF 20 S-STP-DF-20	23	Rapid Infiltration Basin field (RIB)			1 ea	1993	40	15	\$40,000	\$40,000	Fair	Piping may be an issue	2 2 2	Secure funding to connect STP to Twin Ceda	System Capital Upgrade/New Include	d above 5-10 Year
3	809	1532 Gallier Rd	GALLIER ROAD	GIS	S SS	5 S 21 S-SS-S-21		Sewermain, 150mm			283 m	1993	80	55	\$500	\$141,654			2 2 2	Assess/Inspect sewermains, manholes, and c	eanou Operations \$15	000 5-10 Year
4	809	1532 Gallier Rd	HOLLAND AVENUE	GIS	S SS	5 S 22 S-SS-S-22		Sewermain, 150mm			340 m	1993	80	55	\$500	\$169,937			2 2 2	Assess/Inspect sewermains, manholes, and c	eanou Operations Include	d above 5-10 Year
5	809	1532 Gallier Rd	PRINCESS AVENUE	GIS	S SS	5 S 23 S-SS-S-23		Sewermain, 150mm			213 m	1993	80	55	\$500	\$106,325			2 2 4	Assess/Inspect sewermains, manholes, and c	eanou Operations Include	d above 5-10 Year
																4						
6	809	1532 Gallier Rd	PRINCESS CLOSE	GIS	S SS	5 S 24 S-SS-S-24		Sewermain, 150mm			56 m	1993	80	55	\$500	\$28,193			2 2 2	Assess/Inspect sewermains, manholes, and c	eanou Operations Include	d above 5-10 Year
				010												405.001						
/	809	1532 Gallier Rd	REGENT PLACE	GIS	S SS	5 S 25 S-SS-S-25		Sewermain, 150mm			1/0 m	1993	80	55	\$500	\$85,094			2 2 2	Assess/Inspect sewermains, manholes, and c	eanou Operations Include	d above 5-10 Year
												1000				<u></u>						
8	809	1532 Gallier Rd	SOREN PLACE	GIS	S SS	5 S 26 S-SS-S-26		Sewermain, 150mm			229 m	1993	80	55	\$500	\$114,253			2 2 2	Assess/Inspect sewermains, manholes, and c	eanou Operations Include	a above 5-10 Year
0	000	1522 Callier Pd	Entiro system					Service Connections				1993	©0	C C	¢2 000	¢242.000				Accord/Increat cowermains, manhales, and a	eanoul Operations Include	d above 5-10 Year
9	809	1532 Gallier Rd 1532 Gallier Rd	Entire system			SV         27         S-SS-SV-27           S         MH         28         S-SS-MH-28		Service Connections			81 ea		<u> </u>	) ) ) )		\$243,000				Assess/Inspect sewermains, manholes, and c		
9	809		Entire system	615	3 55						13 ea	1222	40	15	\$8,000	\$104,000				Assess/Inspection manholes for deterioratio	n to det Operations Include	d above 5-10 Year
										L												

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# Site notes: Short term - replace system with LS to connect to twin cedars. (may be long term discharge location for twin cedars)

	Current Year	2018	Value per user	\$17,767	
	Current Year	2018	Value per user	\$17,767	

Yee		5.4	
SEWAGE FIELD IN	TREATMENT PLANT		DRRISON HERSHFIELD
SYSTEM:	Gbble Hill Sever	DATE:	Nov. 22/17
SYSTEM CODE:	809	PROJECT No.:	5170700
INSPECTED BY:		CVRD STAFF PRESENT:	
1) <u>Type of Trea</u>	Itment System (Schematic)		
2) Site Condition	ns/Security		
3) Condition of s	Structure:		

809 (1)



**<sup>809 (2)</sup>** 1 of 12



809 (3)



**809 (4)** 2 of 12



809 (5)



**809 (6)** 3 of 12



809 (7)



**<sup>809 (8)</sup>** 4 of 12



809 (9)



**<sup>809 (10)</sup>** 5 of 12



809 (11)



**809 (12)** 6 of 12



809 (13)



**809 (14)** 7 of 12



809 (15)



**<sup>809 (16)</sup>** 8 of 12



809 (17)



**809 (18)** 9 of 12



809 (19)



**809 (20)** 10 of 12



809 (21)



**809 (22)** 11 of 12



809 (23)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Coble Hill - Sewage Treatment Plant - Functional Code 809

BLDG Name			đ		<b>a</b>	CON	<b>MPONENT</b>		CONDITION ASSESSMENT							LIFECYCLE DA	ТА	RECOMMENDATION			If recommended					OPIN	ION OF PRO	BABLE COST		
	BLDG Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elements	Level 3 Individu: Elements	ID	Location / Type	Photo	Description & History	Condition	Condition Performance Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action		Priority	Can this work be phased over multiple years ?	work not complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?		Quantity	Unit Rate	Unit Subtotal Repair or	Replacement Cost	Consult. Contin-gency	5% Tax	Total in 2017 Dollars	
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations		The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	5	5	2008	21-Nov-	17 MH	10	50	43	The foundations are expected to remain Not Applicable serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Yes	Yes	Yes	No	200	\$20	5F \$4,	100	0% 5%	5%	\$5,000
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	A Substructure	A10 Foundations	A1030 Slab on Grad	de A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade		The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5	2011	21-Nov-	17 MH	7	50	43	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repair, if needed. No capital expenses associated with this item are expected. Issolated areas of plywood are present at grade.	Not Applicable	Yes	Yes	Yes	No	200	\$10 5	5F \$2,	00	0% 5%	5%	\$3,000
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure		The superstructure is manufactured panel system, supported on a cast-implace concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5	5	2011	21-Nov-	17 MH	7	30	23	The manufactured structural components Not Applicable are expected to last the life of the building. Replace the valia and roof at the end of their service life.	Not Applicable	Yes	Yes	Yes	No	200	\$120	5F \$24	000	0% 5%	5%	\$27,000
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	lls B201001 Exterior Enclosure	Exterior Walls/ Metal Panel		The superstructure is manufactured panel system. Water ingress issues were noted.	4	4	2011	21-Nov-	17 MH	7	10	1	Reseal cladding joints and review flashing Repair Allowance detailing.	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	LS \$1,	00	0% 15%	5%	\$2,000
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	lls B201001 Exterior Enclosure	Exterior Walls/ Metal Panel		The superstructure is manufactured panel system. Water ingress issues were noted.	5	5	2011	21-Nov-	17 MH	7	30	23	Replace structure at the end of its service Replacement life. The cost of this item has been included in Item 3 Superstructure.	3 - Future Renewal	Yes	Yes	No	No							
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	B Shell	B20 Enclosure	E2030 Exterior Doors	8203001 Solid Doors	Exterior Walls/ Door	1	A double metal door is present on the building.	5	5	2011	21-Nov-	17 MH	7	30	23	Replace door at the end of its service life. Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA \$1,	00	0% 5%	5%	\$2,000
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly		The superstructure is manufactured panel system. Water ingress issues were noted.	5	5	2011	21-Nov-	17 MH	7	10	1	Reseal cladding joints and review flashing Replacement detailing.	3 - Future Renewal	No	Yes	No	No	1	\$1,500	LS \$1,	00	0% 5%	5%	\$2,000
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	DS02002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	5	5	2011	21-Nov-	17 MH	7	20	13	Replace lights at the end of their service Replacement life.	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$2	00	0% 0%	5%	\$1,000

Cowichan Valley Regional District
Facility Condition Assessment and Capital Plan
Coble Hill - Sewage Treatment Plant - Functional Code 809

			9	ents	_	(	COMPONENT		CONDITION ASSESSM	MENT					LIFECYCLE D	ATA	RECOMMEN	IDATION			If recommende	ed				OPI	INION OF P	ROBABLE C	OST		10-YEA	R CAPITAL PL	AN						
BLDG Name	BLDG Type	Function Code	Level 1 Ma Jor Gro Elements	Level 2 Group Elems	Level 3 Individua Elements	ID	Location / Type	Pho		Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By Age in 2018	Typical Life Cycle or Action Inter val	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	work not complete can th rate of deterioration be expected to increase ?	will a failure in this system lear to a loss of use of the facility 2	condition	antity	Unit Rate	Unit Subtotal	Repair or Replacement Cost	Consult.	Contin-gency E1		2018 \$4,000		2020 \$0	2021 \$0	2022 \$8,000	2023 : \$0	2024 2 \$0 :	2025 203 \$0 \$0	5 2027 \$0
Coble Hill - Sewage Treatment Plant			A Substructure		A1010 Standard Foundations	Foundations	Underground/ Foundati		The foundation is comprised of cash-in-place concrete found with concrete foundation will. The foundation is concealed review, with the exception of some above-grade foundation on some elevations.	wall	5	2008 2:		МН 10	50	43	The foundations are expected to remain serviceable for the life of the building. Na capital expenses associated with this item are expected.	Not Applicabl	e Not Applicable	Yes	Yes	Yes	No	200	\$20	SF Ş.	4,000	0%	5% 59	6 \$5,000									
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	A Substructure	A10 Foundations	A1030 Slab on C	irade A103001 Standard S on Grade	ilab İnterior of Building At-G Slab-on-Grade	irade/ 1	The floor's concreter side-orgade. Isolated Harline cracking observed. He organizations of major settlement or heaving was reported or observed.		5	2011 2:	1-Nov-17	MH 7	50	43	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected. Issolated areas of phywood are present at grade.	o Not Applicabl	e Not Applicable	Yes	Yes	Yes	No	200	\$10	SF S:	2,000	0%	5% 59	6 \$3,000									
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	B Shell	B10 Superstructure	B10 Superstruct	ure B10 Superstructure	Interior of Building/ Gen Superstructure	neral 1	In the superstructure is munifactured panel system, supported a cash-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of is term leakage that would allude to concealed structural dama	long-	5	2011 2:	1-Nov-17	MH 7	30	23	The manufactured structural component are expected to last the life of the building. Replace the walk and roof at the end of their service life.	s Not Applicabl	e Not Applicable	Yes	Yes	Yes	No	200		SF \$2			5% 59										
Coble Hill - Sewage Treatment Plant	Treatment Plant			CB20 Exterior Enclosure	B2010 Exterior	Valls B201001 Exterior Enclosure	Exterior Walls/ Metal Pa		The superstructure is manufactured panel system. Water ing issues were noted.							1	Reseal cladding joints and review flashing detailing.	Repair Allowan	ce 3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	LS \$	1,500	0%	15% 59	6 \$2,000	\$2,000				\$8,000				
Coble Hill - Sewage Treatment Plant	Treatment Plant			CB20 Exterior Enclosure		Valls B201001 Exterior Enclosure	Exterior Walls/ Metal Pa		The superstructure is manufactured panel system. Water ing issues were noted.							23	Replace structure at the end of its service life. The cost of this item has been included in Item 3 Superstructure.		Renewal		Yes	No	No																
Coble Hill - Sewage Treatment Plant	Treatment Plant						s Exterior Walls/ Door		A double metal door is present on the building.					MH 7		23	Replace door at the end of its service life.		Renewal		Yes	No	No	1		EA \$			5% 59										
Coble Hill - Sewage Treatment Plant	Treatment Plant			D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assen	mbly 1	The superstructure is manufactured panel system. Water ing issues were noted.							1	Reseal cladding joints and review flashing detailing.		Renewal		Yes	No	No	1						\$2,000	\$2,000								
Coble Hill - Sewage Treatment Plant	Sewage Treatment Plant	809	C Interiors	D50 Electrical	D5020 Lighting Branch Wiring	and D502002 Lighting Equipment	Exterior Lighting Equipm	nent	An exterior light is present on the building near the entrance.	r. 5	5	2011 2:	1-Nov-17	MH 7	20	13	Replace lights at the end of their service life.	Replacement	: 3 - Future Renewal	Yes	Yes	No	No	1	\$200	15 5	\$200	0%	0% 59	s \$1,000									

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Cowichan Valley Regional District

Arbutus Mountain Heights - Sewage Treatment Building - Functional Code 805



Photo 1



Photo 2

## 810 - Mesachie Lake Sewer

Infrastructure Condition Assessment and Capital Plan 6740 Forestry Road, Mesachie Lake, BC

#### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate Number of Users	\$2,052,998 49	
Replacement Cost Per User	\$41,898	
Annual Replacement Cost (40 Years)	\$50,073 per yea	r
Annual Replacement Cost (80 Years)	\$25,346 per yea	r
10 Year Capital Plan Total	\$1,700,000	
10 Year Operations and Maintenance Plan Total	\$0	

#### PROPERTY DESCRIPTION

The Mesachie Lake Sewer System started construction in the 1940's and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	1945	Innova Report
Septic Tanks/Disposal Field	1977	Innova Report

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### CONTACT INFORMATION

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com



July 18, 2018

**Date Prepared** 

## 810 - Mesachie Lake Sewer

Infrastructure Condition Assessment and Capital Plan 6740 Forestry Road, Mesachie Lake, BC

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
March 7, 2018	Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
June 12, 2018	Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
July 18, 2018	Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New



6740 Forestry Road, Mesachie Lake, BC

Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan - DRAFT**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total	
Critical	1							
Critical (0 - 1 Year)	2						\$0	
(0 i rear)	3							
lucionarita est	4	1 to 7	ALL	Capital Upgrade/New	Install new collection and treatment system (STEP system).	\$1,700,000		
Important (1 - 2 Year)	5						\$1,700,000	
	6							
Short Term	7							
(2 - 5 Year)	8						\$0	
(2 5 (car)	9							
	10							
Medium Term (5 - 10 Year)	11						\$0	
(3 - 10 fear)	12							
						Total	\$1,700,000	

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total		
	1								
Critical (0 - 1 Year)	2						\$0		
(0-1 fear)	3								
luc a cate at	4								
Important (1 - 2 Year)	5						\$0		
(1 - 2 fear)	6								
	7								
	8						\$0		
Short Term	9								
(2 - 5 Year)	10								
	11								
	12								
	13								
Medium Term	14								
(5 - 10 Year)	15						\$0		
(3 - 10 real)	16						l		
	17								
						Total	\$0		

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:	Cowichan Valley F	Cowichan Valley Regional District (CVRD)				
System:	810	Mesachie Lake Sewer				
Civic Address:	6740 Forestry Rd					
Geographic Location:	East of Bear Lake					
Customers:	Parcels:	49				
	Users:	49				
Asset ID		Location				
	Function Code	Address				
1	810	6740 Forestry Rd	Sev			
2	810	6740 Forestry Rd	Sev			
3	810	6740 Forestry Rd	BE			
4	810	6740 Forestry Rd	BE			

	03013.	45									
Asset ID		Location						Asset Cod	е		
	Function Code	Address	Location	DWG Ref	Major	Minor	Spec	ID	Asset Code	Photo	
1	810	6740 Forestry Rd	Sewage treatment plant	Site Visit / Photos	S	STP	ET	1	S-STP-ET-1	2 to 8	Sewage treatme
2	810	6740 Forestry Rd	Sewage treatment plant	Site Visit / Photos	S	STP	DF	2	S-STP-DF-2	2 to 8	Disposal field
3	810	6740 Forestry Rd	BEAR LAKE ROAD	GIS	S	SS	S	3	S-SS-S-3		Sewermain, 150
4	810	6740 Forestry Rd	BEAR LAKE ROAD	GIS	S	SS	S	4	S-SS-S-4		Sewermain, unki
5	810	6740 Forestry Rd	FISH ROAD	GIS	S	SS	S	5	S-SS-S-5		Sewermain, unki
6	810	6740 Forestry Rd	FORESTRY ROAD	GIS	S	SS	S	6	S-SS-S-6		Sewermain, unkı
6	810	6740 Forestry Rd	FORESTRY ROAD	GIS	S	SS	S	7	S-SS-S-7		Sewermain, unki
7	810	6740 Forestry Rd	Entire system	GIS	S	SS	MH	8	S-SS-MH-8		Sewer manholes
					1						

# Infrastructure Condition Assessment

Total Replacement ValueCurrent Year2018Value per user 

 Asset Inventory

 Make
 Model
 Material
 Quantity
 Quantity Unit
 Year Installed
 Year Renewed
 Service Life Expectancy
 Est. Remaining Service Life

 1
 1
 2
 ea
 1977
 40
 0
 0

 Description eatment plant, Septic tank Unit Price \$400,000 2 ea 1977 \$250,000 40 CL 158 m 1945 \$500 80 202 m 1945 \$500 , unknown diameter (Assume 150mm for replacement costing) 80 PVC 9 m 1945 \$500 , unknown diameter (Assume 150mm for replacement costing) 80 
 Image: Note of the second se n, unknown diameter (Assume 150mm for replacement costing) n, unknown diameter (Assume 150mm for replacement costing) \$500 \$500 \_\_\_\_\_ 80 7 6 ea 1945 \$8,000 40

al Replacement Value	\$2,052,998							
ue per user	\$41,898	]						
				Condition Assessment				Recommendations / Acti
Unit Price	Replacement Value of Asset	Physical Condition	Level of Service Condition	Demand Condition	Probablity of Failure	Severity of Failure	Condition	
\$400,000	\$800,000	Poor - no controls/communications, limited grade of system	Does not meet standard		4	3	2	Install new collection an
\$250,000	\$500,000	Poor	Does not meet standard	Meeting Class D effluent, no permit	4	3	2	Install new collection an
\$500	\$79,000				4	3	2	Install new collection and
\$500	\$100,804				4	3	2	Install new collection and
\$500	\$4,500				4	3	2	Install new collection an
\$500	\$513,194				4	3	2	Install new collection an
\$500	\$7,500				4	3	2	Install new collection an
\$8,000	\$48,000				4	3	2	Install new collection and

mmendations / Action Items		10 Year Capital Plan		
Description	Type of Work	Budget Estimate	Timing	Comment/Question to be resolved
II new collection and treatment system (STEP system).	Capital Upgrade/New	\$1,700,000	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	
II new collection and treatment system (STEP system)	Capital Upgrade/New	Included above	1-2 Year	

	A AN			
				10000
	SEWAGE TREATMENT		MORRISON HERSH	FIELO
1	SYSTEM: Mesachie La	he Selver DATE	Nov. 21/17	
1	SYSTEM SID		ECT No.: 5170700	
20	INSPECTED BY:	PRES	D STAFF SENT:	-
	1) <u>Type of Treatment System (Scher</u> - Saptic tank & e	natic) hisposal field -	states half of the. Firm water syst	~
	2) Site Conditions/Security			
A State	3) Condition of Structure:			

810 (1)





810 (3)





810 (5)



**810 (6)** 3 of 4



810 (7)





July 18, 2018

**Date Prepared** 

## 811 - Bald Mountain Sewer

Infrastructure Condition Assessment and Capital Plan 9455 Marble Bay Rd, Honeymoon Bay, BC

**PROPERTY STATISTICS AND REPORT SUMMARY** 

System Replacement Cost Estimate	\$3,666,112	
Number of Users	53	
Replacement Cost Per User	\$69,172	
Annual Replacement Cost (40 Years)	\$43,366	per year
Annual Replacement Cost (80 Years)	\$45,261	per year
10 Year Capital Plan Total	\$0	
10 Year Operations and Maintenance Plan Total	\$50,000	

#### **PROPERTY DESCRIPTION**

The Bald Mountain Sewer System was constructed in 2009 and includes the phases outlined in the table below.

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Development	Year Installed	Source
Sewage Treatment Plant	2009	Record Drawing (30701-3)
Lift Station	2008	Record Drawing (1049-C-PS1)
Marble Bay Rd, Lakefront Dr, Lakefront Place	2009	Record Drawing (1049-D1)
Cabana Place, South Lane, North Lane	2014	Record Drawing (12-212)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### **CONTACT INFORMATION**

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com



## 811 - Bald Mountain Sewer

Infrastructure Condition Assessment and Capital Plan 9455 Marble Bay Rd, Honeymoon Bay, BC

Date Prepared

July 18, 2018

#### **REPORT NOTES**

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 8, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
	and Kieran Bertsch	
July 4, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD for
	and Kieran Bertsch	review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the
		following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		3) Include disclaimer on cost estimates
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New



### 811 - Bald Mountain Sewer

Infrastructure Condition Assessment and Capital Plan 9455 Marble Bay Rd, Honeymoon Bay, BC

Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
	3						
luc a cato a t	4						
Important (1 - 2 Year)	5						\$0
	6						
Short Term	7						
(2 - 5 Year)	8						\$0
(2 - 5 Tear)	9						
	10						
Medium Term (5 - 10 Year)	11						\$0
(5 - 10 fear)	12						
						Total	\$0

Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical	2						\$0
(0 - 1 Year)	3						
luc a cuto at	4						
Important (1 - 2 Year)	5						\$0
(I - Z Year)	6						
	7	1	S-STP-FTR-6	Operations	Assess/inspect filter membranes for deterioration to determine replacement timing/phasing. Replace membrane filters when they reach the end of their design life.	\$5,000	
(2 - 5 Year)	8	2	ALL	Operations	Inspect/assess lift stations for deterioration to determine replacement timing/phasing.	\$10,000	\$15,000
	9						
	10						
	11						
	12				Assess/inspect wastewater treatment plant for deterioration to		
	13	1	ALL	Operations	determine replacement timing/phasing.	\$15,000	
Medium Term	14	3, 4, 5 and 13	ALL	Operations	Assess/Inspect forcemains for deterioration to determine replacement timing/phasing.	\$20,000	\$35,000
(5 - 10 Year)	15						
	16						
	17						
						Total	\$50,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner: Cov System: 811	wichan Valley Regional District (CVRD) 1 Bald Mountain Sewer					Infrastructure Condition Assessment										
	55 Marble Bay rd st side of Cowichan Lake															
Customers: Par	rcels: 132								Г	Current Year	2018	Total Replacement Value Value per user	\$3,666,112 \$69,172			
Asset ID	Location				Asset Code			Asset Inventory			2010		<i>QUUITE</i>		Condition Assessment	Recommendations / Action Items 10 Year Capital Plan
FL	unction Code Address	Location	DWG Ref	Major Minor	or Spec ID Asset Code	Photo Description Make Model Ma	terial Quantity	Quantity Unit Yea	r Installed Year Renewed S	Service Life Expectancy Est. Rem	naining Service Life	Unit Price	Replacement Value of Asse	et Physical Condition	Level of Service Condition Demand Condition	Probablity of Failure     Severity of Failure     Condition     Description     Type of Work     Budget Estimate     Timing     Comment/Question to be resolved       Image: Construct of Failure
1	811 9455 Marble Bay rd	Woodland shores WWTP	30701-3	S STP	STP 1 S-STP-STP-1	5 to 16, MOV 1, MOV 2 Wastewater treatment plant building	1	еа	2010	40		Refer to Bald Mountain Sewer System Building		Good - fenced and gated	Meets standard Able to meet capacity, designed for full build-out	Mountain Sewer System Building
			50701 5	5 511				Cu	2010	40		Condition Assessment.			Able to meet capacity, designed for full build out	Condition Assessment.
1	811 9455 Marble Bay rd	Woodland shores WWTP	30701-3	S STP	ET 2 S-STP-ET-2	5 to 7 Pre-cast equalization tanks, 2.5x5x3m	3	ea	2010	40	32	\$100,000	\$300,000	Good	Meets standard	2 2 4 Assess/inspect wastewater treatment plant for deterioration to determine Operations \$15,000 5-10 Year
1	811 9455 Marble Bay rd	Woodland shores WWTP	30701-3	S STP	ET 5 S-STP-ET-5	5 to 7 Pre-cast tank with separated effluent and influent	1	ea	2010	40	32	\$100,000	\$100,000	Good	Meets standard	2     2     4     Assess/inspect wastewater treatment plant for deterioration to determine     Operations     Included above     5-10 Year
			20701.2						2010	20	12	¢150.000	<u> </u>	Const.		Image: Second
	811 9455 Marble Bay rd	Woodland shores WWTP	30701-3		FTR 6 S-STP-FTR-6	14 Membrane Bio-Reactor, MBR A	1	ea	2010	20	12	\$150,000	\$150,000	Good	Meets standard	3       2       3       timing/phasing. Replace membrane filters when they reach the end of their       Operations       \$5,000       2-5 Year         design life.       design life.       design life.       design life.       design life.       design life.
1	811 9455 Marble Bay rd	Woodland shores WWTP	30701-3	S STP	ET 7 S-STP-ET-7	Pre-cast digester tanks (Phase 1)	2	еа	2010	40	32	\$100,000	\$200,000	Good	Meets standard	2 2 4 Assess/inspect wastewater treatment plant for deterioration to determine Operations Included above 5-10 Year
1	811 9455 Marble Bay rd	Woodland shores WWTP	Site Visit / Photos	S STP	PP 9 S-STP-PP-9	5 to 9, 14, 15 Process piping c/w valves, pipes, tees	1	LS	2010	40	32	\$100,000	\$100,000	Good	Meets standard	2       4       Assess/inspect wastewater treatment plant for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1	811 9455 Marble Bay rd	Woodland shores WWTP	Site Visit / Photos		COM 10 S-STP-COM-10	10 to 12 Communications (STP)	1	LS	2010	10	2	\$20,000	\$20,000	Good - intrusion alarms	Meets standard	2       4       Assess/inspect wastewater treatment plant for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1	811 9455 Marble Bay rd	Woodland shores WWTP	Site Visit / Photos		GEN 11 S-STP-GEN-11	17 Generator (STP)	1	еа	2010	40	32	\$100,000	\$100,000	Good	Meets standard	2     2     4     Assess/inspect wastewater treatment plant for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
2	811 9455 Marble Bay rd	Lift station	1049-C-PS1		BLD 12 S-LS-BLD-12	1 to 4 Lift station	1	еа	2008	40	20	\$250,000	\$250,000	Good - no fence	Meets standard Able to meet capacity	2     3     Inspect/assess lift stations for deterioration to determine replacement     Operations     \$10,000     2-5 Year
2	· · · · · · · · · · · · · · · · · · ·		1049-C-PS1 1049-C-PS1				1		2008	40	30			Good		Liming/phasing.
2	811 9455 Marble Bay rd	Lift station			VC 13 S-LS-VC-13	2 Valve chamber c/w concrete vault, valves, pipes	1			40	30	\$100,000	\$100,000	Good	Meets standard	timing/phasing.
2	811 9455 Marble Bay rd	Lift station	1049-C-PS1		PMP         14         S-LS-PMP-14	2 Submersible pump 600 volts 3/60 6.5 HP/4.8 kW 3465 rpmsh Flygt NP-3102	2	ea	2008	20	10	\$7,000	\$14,000	G000	Meets standard Able to meet capacity	2 3 3 timing/phasing. Operations Included above 2-5 Year
2	811 9455 Marble Bay rd	Lift station	Site Visit / Photos	S LS	COM 16 S-LS-COM-16	3, 4 Communications (LS)	1	LS	2008	10	0	\$9,000	\$9,000	Good	Meets standard	2     3     3     Inspect/assess in stations for deterioration to deterioration to determine replacement     Operations     Included above     2-5 Year       iming/phasing.     Image: Determine replacement     Image: Determine replacement     Image: Determine replacement     Image: Determine replacement
3	811 9455 Marble Bay rd	Near lift station	1049-C-PS1	S FM	PP 17 S-FM-PP-17	Forcemain pipe, 75mm	13	m	2008	80	70	\$425	\$5,525			1     3     4     Assess/Inspect forcemains for deterioration to determine replacement     Operations     \$20,000     5-10 Year
3	811 9455 Marble Bay rd	Near lift station	1049-C-PS1		PP 18 S-FM-PP-18	Forcemain pipe, 100mm	1	m	2008	80	70	\$450	\$450			1 Assess/Inspect forcemains for deterioration to determine replacement Operations Included above 5-10 Year
																Image: Strain of the strain
4	811 9455 Marble Bay rd	Marble bay rd. 0+480 - 0+715	1049-D1	S FM	PP 19 S-FM-PP-19	Forcemain pipe, 100mm     CL150 C900     DR18	VC 235	m	2009	80	71	\$450	\$105,750			134Assess/Inspect forcemains for deterioration to determine replacement timing/phasing.OperationsIncluded above5-10 Year
4	811 9455 Marble Bay rd	Marble bay rd. 0+940 - 1+130	1049-D1		PP 20 S-FM-PP-20	Forcemain pipe, 150mm CL150 C900	VC 725	m	2009	80	71	\$500	\$362,500			134Assess/Inspect forcemains for deterioration to determine replacement timing/phasing.OperationsIncluded above5-10 Year
	811 9455 Marble Bay rd	Cabana pl LS - Marble bay rd (1+029 - 1+13)	0) 12.212		PP 21 S-FM-PP-21	Earcomain ning 75mm	VC 107		2014	80	76	¢42E	¢15 сод			1       3       4       Assess/Inspect forcemains for deterioration to determine replacement       Operations       Included above       5-10 Year
5	811 9455 Marble Bay rd		,			Forcemain pipe, 75mm     SDR26	VC 107	m	2014	80	76	\$425	\$45,637			1     3     4     Assess inspect foremany for determine replacement     Operations     Included above     5-10 Year
6	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Lakefront Dr. 0+199.12 Lakefront Dr. 0+155.10	1049-D1 1049-D1	S SS S SS	MH         22         S-SS-MH-22           MH         23         S-SS-MH-23	SMH 10 SMH 9 SMH 9	1		2009	40 40	31 31	\$8,000 \$8,000	\$8,000 \$8,000			1         2         5         10+ Year           1         2         5         10+ Year
6	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Lakefront Dr. 0+107.44 Lakefront Dr. 0+037.72	1049-D1	S SS	MH 24 S-SS-MH-24	SMH 8 SMH 7	<u>1</u> 1	ea	2009 2009	40	31	\$8,000 \$8,000	\$8,000			1         2         5           1         2         5           1         10+Year
6	811         9455 Marble Bay rd           811         9455 Marble Bay rd           811         9455 Marble Bay rd	Lake front pl. 0+309.94	1049-D1 1049-D1	S SS	MH         25         S-SS-MH-25           MH         26         S-SS-MH-26           MH         27         S-SS-MH-27	SMH 19	1	еа	2009 2009	40	31	\$8,000	\$8,000			1         2         3           1         2         5           1         2         5           1         10+Year
6	811 9455 Marble Bay rd	Lakefront Dr. 0+245 Lakefront Dr. SMH 11 - SMH 10	1049-D1	3         33           S         SS	MH         27         S-SS-MH-27           S         33         S-SS-S-33		VC 41	m	2009	80	71	\$550	\$22,457			1         2         5           1         1         5           1         5
6	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Lakefront Dr. SMH 10 - SMH 9 Lakefront Dr. SMH9 - SMH 8	1049-D1 1049-D1	S         SS           S         SS	S         34         S-SS-S-34           S         35         S-SS-S-35	Sewermain pipe, 200mm SDR 35	VC 46	m m	2009 2009	80	71 71	\$550	\$25,174			1         1         5           1         1         5           1         1         5
6 6	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Lakefront Dr. SMH 8 - SMH 7 Lakefront Dr. SMH 10 - SMH 19	1049-D1 1049-D1	S SS S SS	S         35         S-SS-S-35           S         36         S-SS-S-36           S         38         S-SS-S-38           SV         21         S-SS-SV-21	Sewermain pipe, 200mm     SDR 35       Sewermain pipe, 200mm     SDR 35	VC 75	m m	2009	80 80	71 71	\$550 \$550	\$41,443 \$64,598			1         1         5           1         1         5           1         1         5
6	811 9455 Marble Bay rd	Lakefront dr/lakefront pl	1049-D1	S SS	SV 21 S-SS-SV-21	Service lines	19		2009	40	31	\$3,000	\$57,000			1         2         5           Image: A state of the s
7	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Marble bay rd. 0+715.50 Marble bay rd. 0+789.35	1049-D1 1049-D1	S SS S SS	MH         28         S-SS-MH-28           MH         29         S-SS-MH-29           MH         30         S-SS-MH-30           MH         31         S-SS-MH-31           MH         32         S-SS-MH-32           S         37         S-SS-S-37           S         20         S-SS-S-20           SV         40         S-SS-SV-40	SMH 2         SMH 3         SMH 3	1 1	ea ea	2009	40 40	31 31	\$8,000 \$8,000	\$8,000 \$8,000			1         2         5           1         2         5           10+ Year         10+ Year
7 7	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Marble bay rd. 0+881.92 Marble bay rd. 0+940.1	1049-D1 1049-D1	S         SS           S         SS	MH         30         S-SS-MH-30           MH         31         S-SS-MH-31	SMH 4	1	ea ea	2009 2009 Contract Co	40 40	31 31	\$8,000 \$8,000	\$8,000 \$8,000			1         2         5           1         2         5           10+ Year         10+ Year
7 7	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Marble bay rd. Lot 4/5 Marble bay rd. SMH 8 - SMH 25	1049-D1 1049-D1	S SS S SS	MH 32 S-SS-MH-32 S 37 S-SS-S-37	SMH 25 Sewermain pipe, 200mm SDR 35	1 VC 10	ea m	2009 2009	40 80	31 71	\$8,000 \$550	\$8,000 \$5,500			1         2         5         10+ Year           1         1         5         10+ Year
7	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Marble bay rd. 0+715 - 0+940 Marble bay rd	1049-D1 1049-D1	S SS	S         20         S-SS-S-20           SV         40         S-SS-SV-40	Sewermain pipe, 200mm     SDR 35       Sewermain pipe, 200mm     SDR 35       Service lines     SDR 35	VC 225	ea ea ea ea m m ea ea	2009	80	71 31	\$550 \$3,000	\$123,750 \$33,000			1       5       10+ Year         1       2       5
8	811 9455 Marble Bay rd	Cabana pl. 0+000 - 0+028	12-212	20 20	S 51 S-SS-S-51		VC 29	m	2014	80	76	\$500	\$14,450			$\begin{array}{c c c c c c c c c c c c c c c c c c c $
8	811         9455 Marble Bay rd           811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana pl. 2+009 - 2+358 (SMH 5 - SMH 6) Cabana pl. 1+010 - 1+113 (SMH 1 - SCO 1)	12-212	S SS	S         52         S-SS-S-S1           S         52         S-SS-S-S2	Sewermain pipe, 150mmDR28Sewermain pipe, 150mmDR28Sewermain pipe, 150mmDR28Sewermain pipe, 150mmDR28	VC 349	m	2014 2014 2014	80 80	76	\$500	\$174,500			1         1         5           1         1         5           1         1         5
8	811 9455 Marble Bay rd	Cabana Pl. 2+236	12-212	S SS	S         SS         SSS-SSS           MH         57         S-SS-MH-57	Sewermain pipe, 150mm     DR28       SMH 1	1	ea	2014 2014 2014	40	36	\$8,000	\$31,300 \$8,000			1         1         3           1         2         5           1         2         5
8 2	811         9455 Marble Bay rd           811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 2+171 Cabana Pl. 2+099	12-212	S         SS           S         SS	S         51         S-SS-S-51           S         52         S-SS-S-52           S         53         S-SS-S-53           MH         57         S-SS-MH-57           MH         58         S-SS-MH-58           MH         59         S-SS-MH-59           MH         60         S-SS-MH-60           MH         61         S-SS-MH-61           MH         62         S-SS-MH-62           MH         63         S-SS-MH-62           MH         64         S-SS-MH-63           MH         65         S-SS-MH-64           MH         65         S-SS-MH-63           MH         66         S-SS-MH-64           MH         65         S-SS-MH-65           MH         66         S-SS-MH-66           MH         67         S-SS-MH-66           MH         68         S-SS-MH-67           MH         69         S-SS-MH-69           MH         70         S-SS-MH-70           MH         71         S-SS-MH-71           MH         72         S-SS-MH-72           SV         73         S-SS-SV-73	SIVIT 2         SIVIT 2           SIMH 3         SIVIT 2	1	m	2014 2014 2014	40 40	30 36	\$8,000 \$8,000	\$8,000			1         2         5           1         2         5           1         2         5
8 8	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 2+038 Cabana Pl. 2+099	<u>12-212</u> 12-212	S SS S SS	MH         60         S-SS-MH-60           MH         61         S-SS-MH-61	SMH 4         SMH 5           SMH 5         SMH 5	1	ea ea	2014 2014	40 40	36 36	\$8,000 \$8,000	\$8,000 \$8,000			1         2         5           1         2         5           10+ Year         10+ Year
<u>8</u> 8	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 2+358 Cabana Pl. 1+043	12-212 12-212	S         SS           S         SS	MH         62         S-SS-MH-62           MH         63         S-SS-MH-63	SMH 6         SMH 7	<u> </u>	ea ea	2014       2014	40 40	36 36	\$8,000 \$8,000	\$8,000 \$8,000			1         2         5           1         2         5           1         2         5
8	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 1+066	12-212 12-212	S         SS           S         SS	MH         64         S-SS-MH-64           MH         65         S-SS-MH-65	SMH 8	1	ea       ea	2014       2014	40 40	36 36	\$8,000 \$8,000	\$8,000 \$8,000			1       2       5         1       2       5
8	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 1+091 Cabana Pl. 3+048 Cabana Pl. 3+024	12-212 12-212	S         SS           S         SS	MH         66         S-SS-MH-66           MH         67         S-SS-MH-67	SMH 10	1	ea ea	2014       2014	40 40	36 36	\$8,000 \$8,000	\$8,000 \$8,000			1       2       5         1       2       5
8	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 3+024 Cabana Pl. 3+008 Cabana Pl. 4+125	12-212 12-212	S         SS           S         SS	MH         68         S-SS-MH-68           MH         69         S-SS-MH-69	SMH 12	<u>1</u> 1	ea ea	2014	40 40	36 36	\$8,000 \$8,000	\$8,000 \$8,000			1       2       5         1       2       5         10+ Year       10+ Year
8	811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 1+113 Cabana Pl. 4+028	12-212 12-212	S SS S SS	MH         70         S-SS-MH-70           MH         71         S-SS-MH-71	SCO 1 SCO 2	1	ea ea ea	2014 2014	40 40	36 36	\$2,000 \$2.000	\$2,000 \$2.000			1     2     5       1     2     5       1     10+ Year
8 8	811         9455 Marble Bay rd           811         9455 Marble Bay rd           811         9455 Marble Bay rd	Cabana Pl. 4+095 Cabana pl/North/south lane	12-212	S         SS           S         SS	MH         72         S-SS-MH-72           SV         73         S_SS_SY_73	SCO 3 Service lines	1 49	ea	2014 2014 2014	40	36 36	\$2,000	\$2,000 \$2,000 \$147.000			1     2     5       1     2     5       1     10+Year
<u> </u>	811 9455 Marble Bay rd 811 9455 Marble Bay rd	North lane, 4+028 - 4+095 (SCO 2 - SCO 3)	12_212		S 55 S-SS-55		49 VC 67		2014	80	76	\$500	\$33,705			
9	811 9455 Marble Bay rd 811 9455 Marble Bay rd	North lane, 4+028 - 4+095 (SCO 2 - SCO 3) North lane, 4+125 - 4+191 (SMH 13 - SMH 8	12 212	S SS	S         55         S-55-5-55           S         56         S-SS-S-56	Sewermain pipe, 150mm     DR28       Sewermain pipe, 150mm     DR28	VC 67 VC 66		2014 2014	80	76	\$500	\$33,705 \$33,000			1         5           1         5           0         0
10	811 9455 Marble Bay rd	South Lane, 3+008 - 3+119 (SMH 12 - SMH 7	7) 12-212	S SS	S 54 S-SS-S-54	Sewermain pipe, 150mm DR28	VC 111	m	2014	80	76	\$500	\$55,500			1     5
11	811 9455 Marble Bay rd	LAKEFRONT DRIVE	GIS	S SS	S 74 S-SS-S-74	Sewermain, unknown diameter (Assume 200mm for replacement costing) (GIS minus catalogued leng	h fror 450	m	2009	80	71	\$550	\$247,478			Image: Constraint of the system of the sy
12	811 9455 Marble Bay rd	LAKEFRONT PLACE	GIS	22 2	S         75         S-SS-S-75	Sewermain, unknown diameter (Assume 150mm for replacement costing)	111	m	2009	80	71	\$500	\$55,643			Image: Constraint of the system of
13	811 9455 Marble Bay rd				PP 76 S-FM-PP-76		0		2009	80	71	n/a	n/a			1       3       4       Assess/Inspect forcemains for deterioration to determine replacement       Operations       Included above       5-10 Year
12	· · · · · · · · · · · · · · · · · · ·	MARBLE BAY ROAD	GIS		+ + + +	Forcemain, 50mm		m	2009	20 20	71	\$450	\$372,983			Liming/phasing.
		MARBLE BAY ROAD	GIS			Forcemain, 100mm (GIS minus catalogued length from 1049-D1)	829	m		ou	71		\$372,983			Image: Description of the state of the s
13	8119455 Marble Bay rd8119455 Marble Bay rd	MARBLE BAY ROAD MARBLE BAY ROAD	GIS		PP         78         S-FM-PP-78           S         79         S-SS-S-79	Forcemain, 150mm (GIS minus catalogued length from 1049-D1) Sewermain, 200mm (includes 48m of unknown diameter) (GIS minus catalogued length from 1049-D1	0 45	m	2009 2009	80	71	\$500 \$550	\$0 \$24,528			134Assess inspect foremanie for determine replacementOperationsIncluded above5-10 Year12510 Year10 Year
14	811 9455 Marble Bay rd	Entire system	GIS		MH 80 S-SS-MH-80	Sewer manholes (GIS minus catalogued length from record drawings)	0		2009	40	31	\$8,000	\$0			1 2 5
		, , , , , , , , , , , , , , , , , , ,										/	τ-			



811 (1)



**811 (2)** 1 of 9



811 (3)



**811 (4)** 2 of 9

811 (5)



**811 (6)** 3 of 9



811 (7)



**811 (8)** 4 of 9



811 (9)



**811 (10)** 5 of 9





811 (11)



**811 (12)** 6 of 9



811 (13)



**811 (14)** 7 of 9

811 (15)



811 Bald Mountain Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's



811 (17)



**Date Prepared** 

## 813 - Mill Springs Sewer

Infrastructure Condition Assessment and Capital Plan 927 Deloume Rd, Mill Bay, BC

#### **PROPERTY STATISTICS AND REPORT SUMMARY**

System Replacement Cost Estimate	\$8,227,184	
Number of Users	210	
Replacement Cost Per User	\$39,177	
Annual Replacement Cost (40 Years)	\$77,668	per year
Annual Replacement Cost (80 Years)	\$101,570	per year
10 Year Capital Plan Total	\$0	
10 Year Operations and Maintenance Plan Total	\$85,000	

#### **PROPERTY DESCRIPTION**

The Mill Springs Sewer System was construction in 1997 and includes the phases outlined in the table below.

Development	Year Installed	Source
Phase 1A - Frayne Rd, Deloume Rd	1997	Record Drawing (C438 001 02 02)
Phase 2 - Gatewheel Rd	2004	Record Drawing (F235-001-00)
Phase 5 - Boompond Rd	2006	Record Drawing (F235-005-00)
Phase 6 - Bucktail Rd, Glendoik Rd	2006	Record Drawing (F235-006-00)
Phase 8 - Bucktail Rd, Deloume Rd	2008	Record Drawing (F235-008-00)
Phase 9 - Gillespie Place	2008	Record Drawing (F235-010-01)
Phase 10 - Mcclaren Rd, Tutor Way, Pratt Rd	2010	Record Drawing (F235-010-02)
Phase 11 - Tutor Way	2011	Record Drawing (60147531)
Phase 13/14 - Pratt Rd, Faulkner Pl, Marie Rd	2015	Record Drawing (60301901)
Phase 15 - Blairgowrie Rd	2016	Record Drawing (60484147)
Sewage Treatment Plant Upgrade	2015	Record Drawing (13198)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### **CONTACT INFORMATION**

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## 813 - Mill Springs Sewer

Infrastructure Condition Assessment and Capital Plan 927 Deloume Rd, Mill Bay, BC

Date Prepared

July 18, 2018

#### **REPORT NOTES**

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 8, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
	and Kieran Bertsch	Dialt inventory assessment was issued to CVRD for review.
July 4, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD for
July 4, 2010	and Kieran Bertsch	review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
, _0, _0_0	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the
		following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		3) Include disclaimer on cost estimates
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New



Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
	3						
luce a cuto a t	4						
Important (1 - 2 Year)	5						\$0
(i zrear)	6						
Short Term	7						
(2 - 5 Year)	8						\$0
· · · · · · · · · · · · · · · · · · ·	9						
	10						
Medium Term (5 - 10 Year)	11						\$0
(5 - 10 fear)	12						
						Total	\$0

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical	2						\$0
(0 - 1 Year)	3						
luce a stand	4						
Important (1 - 2 Year)	5						\$0
(1-2 (ear)	6						
	7						
	8						
Short Term	9						\$0
(2 - 5 Year)	10 11						
	12						
	13	1	ALL	Operations	Inspect/assess STP for deterioration to determine replacement timing/phasing.	\$30,000	
	14	2	ALL	Operations	Inspect/assess disposal field for deterioration to determine replacement timing/phasing.	\$15,000	
Medium Term (5 - 10 Year)	15	4, 6, 9 and 10	As Noted	Operations	Assess/Inspect older sections of Mill Spring collection system for sources of I&I to determine rehabilitation/replacement timing/phasing.	\$30,000	\$85,000
	16	6	S-FM-PP-86 and S-FM-PP-92	Operations	Assess/Inspect forcemains for deterioration to determine replacement timing/phasing.	\$10,000	
	17						
						Total	\$85,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:Cowichan Valley Regional District (CVRD)System:813Bill Springs SewerCivic Address:927 Deloume rdGeographic Location:South of Mill BayCustomers:Parcels:239	Infrastructue Condition Assessment			
Customers:     Parcels:     239       Users:     210		Total Current Year 2018 Value	e per user \$39,177	
Asset ID       Location       Asset Code         Function Code       Address       Location       DWG Ref       Major       Minor       Spec       ID       Asset Code       Photo         1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       STP       1       S-STP-STP-1       2 to 70, MOV 1, MOV 2		tory nit Year Installed Year Renewed Service Life Expectancy Est. Remaining Service Life 2015 40 37 Refer	Unit Price         Replacement Value of Asset         Physical Condition         Level of Service Condition         Demand Condition           r to Mill Springs Sewer System Building Condition Assess         Fair - fenced and gated, old roof         Meets standard         Able to meet capacity, odours present in summer	Becommendations / Action Items       10 Year Capital Plan         Probablity of Failure       Severity of Failure       Condition       Description       Type of Work       Budget Estimate       Timing       Comment/Question to be resolved         Image: Commendation of the severity of Failure       Image: Comment/Question to be resolved       Refer to Mill Springs Sever System Building Condition Assessment.
1 813 927 Deloume rd Sewage treatment plant 13198 S STP FTR 2 S-STP-FTR-2	Influent screen, 15 L/s, 6mm screen openings Huber Rotamat RoK4 Stainless steel 1 ea	2015 40 37	\$100,000 \$100,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     \$30,000     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPET3S-STP-ET-3	Equalization tank     Concrete     1     ea	2015 40 37	\$100,000 \$100,000 Good Able to meet capacity, I&I 20-30%	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     PMP     4     S-STP-PMP-4	Influent pump, submersible grinder, 1.5L/s @ 10m TDH Barnes SGV 2052 L Cast iron 2 ea	2015 20 17	\$5,000 \$10,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     PMP     6     S-STP-PMP-6	Influent pump, submersible grinder, 2.5L/s @ 10m TDH (new impellers) Barnes SGV 2052 L Cast iron 2 ea	2015 20 17	\$5,000 \$10,000	2 2 4 Inspect/assess STP for deterioration to Operations Included above 5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     PMP     8     S-STP-PMP-8	Influent pump, submersible grinder, 4.0L/s @ 10m TDH Barnes SGV 3052 L Cast iron 2 ea	2015 20 17	\$5,000 \$10,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
				Inspect/assess STP for deterioration to
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       ET       10       S-STP-ET-10         Image: I	Emergency storage tank, 248 m3       Concrete       1       ea         Image: Concrete in the storage tank, 248 m3       Ima	2015 40 37	\$150,000 \$150,000	Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       ET       11       S-STP-ET-11	Emergency storage tank, 160 m3       Concrete       1       ea         Image: Concrete in the storage tank, 160 m3       Ima	2015 40 37	\$120,000 \$120,000	determine replacement timing/phasing.
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       PMP       12       S-STP-PMP-12	Emergency storage pump, 3.8L/s @ 7.5m TDH       Myers       WHR5-11       Cast iron       1       ea	2015 20 17	\$5,000 \$5,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     FTR     13     S-STP-FTR-13	Bioreactor, 60 m3/day     Ecofluid     Concrete     1     ea	2015 20 17	\$100,000 \$100,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     FTR     14     S-STP-FTR-14	Bioreactor, 60 m3/day     Ecofluid     USBF     Polypropylene     1     ea	2015 20 17	\$100,000 \$100,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1 813 927 Deloume rd Sewage treatment plant 13198 S STP AM 15 S-STP-AM-15	Anoxic mixerKSBC220/14UMGStainless steel/cast iron1ea	2015 20 17	\$30,000 \$30,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPCOA16S-STP-COA-16	Sludge pre-thickenerEcofluidPVC1ea	2015 40 37	\$20,000 \$20,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPPMP17S-STP-PMP-17	Pre-thickener pump, submersible grinder, 4.2L/s @ 7m TDH Myers WGL20F Cast iron 1 ea	2015 20 17	\$5,000 \$5,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     CC     18     S-STP-CC-18	Flow splitter box     Ecofluid     Epoxy coated steel     1     ea	2015 40 37	\$50,000 \$50,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     FTR     19     S-STP-FTR-19	Bioreactor     Ecofluid     USBF     Concrete     1     ea	2015 20 17	\$100,000 \$100,000	2     2     4     Inspect/assess STP for deterioration to     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     AM     20     S-STP-AM-20	Anoxic mixer     KSB     C220/14UMG     Cast iron body/SS propeller     1     ea	2015 20 17	\$30,000 \$30,000	2     2     4     Inspect/assess STP for deterioration to     Operations     Included above     5-10 Year
				Inspect/assess STP for deterioration to
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       AM       21       S-STP-AM-21	Anoxic mixer, submersible       ABS       RW2022-S16/4-EC       Cast iron body/SS propeller       1       ea	2015 20 17	\$30,000 \$30,000	Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       COA       22       S-STP-COA-22         Image: Complex com	Sludge pre-thickener       Ecofluid       PVC       1       ea         Image: Sludge pre-thickener	2015 40 37	\$20,000 \$20,000	2     2     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       PMP       23       S-STP-PMP-23	Sludge pre-thickener pump, submersible grinder       Myers       WGL 20       Cast iron       1       ea	2015 20 17	\$5,000 \$5,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       PMP       24       S-STP-PMP-24	Anoxic recirculation submersible pump       Zoeller       N151       Cast iron       1       ea	2015 20 17	\$5,000 \$5,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     COA     25     S-STP-COA-25	Sludge pre-thickener, 1m3/day @ 1.5% DS     Ecofluid     PVC     2     ea	2015 40 37	\$5,000 \$10,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1 813 927 Deloume rd Sewage treatment plant 13198 S STP PMP 27 S-STP-PMP-27	Sludge pre-tickener pump, submersible grinderMyersWGL20FCast iron2ea	2015 20 17	\$5,000 \$10,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1 813 927 Deloume rd Sewage treatment plant 13198 S STP FTR 29 S-STP-FTR-29	Bioreactor, 70 m3/day (each)     Ecofluid     USBF     Concrete, Polypropylene/Steel     2     ea	2015 20 17	\$100,000 \$200,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPAM31S-STP-AM-31	Anoxic mixer, submersibleABSRW2022-S16/4-ECCast iron body/SS propeller4ea	2015 20 17	\$30,000 \$120,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     CC     35     S-STP-CC-35	Flow splitter box     Ecofluid     Epoxy coated steel     1     ea	2015 40 37	\$50,000 \$50,000	2 2 4 Inspect/assess STP for deterioration to determine replacement timing/phasing. Operations Included above 5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     PMP     36     S-STP-PMP-36	Anoxic recirculation submersible pump     Zoeller     N151     Cast iron     2     ea	2015 20 17	\$5,000 \$10,000	2 2 4 Inspect/assess STP for deterioration to Operations Included above 5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     FTR     38     S-STP-FTR-38	Microfilter, 15L/s     Fontana     MF-10     Stainless steel     1     ea	2015 20 17	\$100,000 \$100,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing / phasing.     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     PMP     39     S-STP-PMP-39	MF backwash pump, 3.2L/s @ 9.5m TDH Prosser 9-01311-28FK Stainless steel 1 ea	2015 20 17	\$5,000 \$5,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
				Lespect/assess STP for deterioration to
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       ET       40       S-STP-ET-40         Image: I	Filter feed tank, 1.8m3       Polypropylene       1       ea         Image: Constraint of the second	2015 40 37	\$15,000 \$15,000	Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       PMP       41       S-STP-PMP-41	Filter feed centrifugal pump, 8L/s @ 17-10m TDH       Weinman       2K       Cast iron       2       ea	2015 20 17	\$10,000 \$20,000	Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       FTR       43       S-STP-FTR-43	Sand filter, 21.64 ft2 @ 6.5GPM/ft2, 8L/s       Waterco       SMD1600       FRP body       2       ea	2015 20 17	\$50,000 \$100,000	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     UV     45     S-STP-UV-45	UV disinfection, 4L/s     Voltrex     VUV-4XL-16W     PVC body     1     ea	2015 20 17	\$15,000 \$15,000 Retrofitted to use Trojan parts.	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPUV46S-STP-UV-46	UV disinfection, 4L/sVoltrexV300-4-6-L-WSPVC body1ea	2015 20 17	\$15,000 \$15,000 Retrofitted to use Trojan parts	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1 813 927 Deloume rd Sewage treatment plant 13198 S STP BLW 47 S-STP-BLW-47 56, 57	Air blower, 300Nm3/hr @ 54kPaAerzenGM7L DN80Steel/Cast iron4ea	2015 20 17	\$30,000 \$120,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPET51S-STP-ET-5120 to 24	Sludge holding tank, 28 m3     Polypropylene     1     ea	2015 40 37	\$100,000 \$100,000 Fair	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plant13198SSTPPMP52S-STP-PMP-52	SF backwash pump, 8L/s @ 7.6m TDH Myers WHR15H-53 Cast iron 2 ea	2015 20 17	\$5,000 \$10,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
1     813     927 Deloume rd     Sewage treatment plant     13198     S     STP     ET     54     S-STP-ET-54	Reclaimed water storage tank, 21 m3     Image: Concrete water storage tank, 21 m3	2015 40 37	\$80,000 \$80,000	2 2 4 Inspect/assess STP for deterioration to Operations Included above 5-10 Year
Image:	Reclaimed water pump, 4.1 L/s @ 97m TDH     Simflo     SG8C-11     Cast iron     2     ea	2015 20 17	\$15,000 \$30,000	2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
				2     2     4     Inspect/assess STP for deterioration to determine replacement timing/phasing.     Operations     Included above     5-10 Year
		2015 20 17		Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       PMP       58       S-STP-PMP-58	Make up water pump, 1 L/s @ 7.5m TDH       Grundfos       Series AP 12       Stainless steel       3       ea	2015 20 17	\$5,000 \$15,000	Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1       813       927 Deloume rd       Sewage treatment plant       13198       S       STP       GEN       61       S-STP-GEN-61       43 to 46         Image: Complex Com	Emergency power generator, 130 kW       Simson-Maxwell       130 PSW       1       ea         Image: Comparison of the second	2015 40 37	\$120,000 \$120,000 Good Meets standard	Z     Z     4     determine replacement timing/phasing.     Operations     Included above     5-10 Year
1813927 Deloume rdSewage treatment plantSite Visit / PhotosSSTPCOM62S-STP-COM-6216, 28, 41, 47 to 551813927 Deloume rdSewage treatment plantSite Visit / PhotosSSTPPP63S-STP-PP-639, 10, 13, 14, 22, 29 to 37, 39, 40, 55	Communications (STP)LSto 61Process piping c/w valves, pipes, tees1LS	2015     10     7       2015     40     37	\$20,000         \$20,000         Good         Meets standard           \$200,000         \$200,000         L         L         L	2       2       4       Inspect/assess STP for deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year
				2       2       4       Inspect/assess disposal field for determine replacement       Operations       \$15,000       5-10 Year
	Sewage disposal field c/w valves, process piping	1997     40     19	\$100,000 \$100,000	2       2       4       deterioration to determine replacement timing/phasing.       Operations       \$15,000       5-10 Year         -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       - <td< td=""></td<>
2813927 Deloume rdSewage disposal field: Phase 3F235-018-00SSTPDF65S-STP-DF-65Image: Deloume rdImage: Deloume rd <td>Sewage disposal field c/w process piping, valves       1       ea         Image: Disposal field c/w process piping, valves       Image: Disposal field c/w process piping, valves       1       ea         Image: Disposal field c/w process piping, valves       Image: Disposal field c/w process piping, valves       1       ea</td> <td>2008 40 30</td> <td>\$100,000 \$100,000 </td> <td>2       2       4       deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year         -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -</td>	Sewage disposal field c/w process piping, valves       1       ea         Image: Disposal field c/w process piping, valves       Image: Disposal field c/w process piping, valves       1       ea         Image: Disposal field c/w process piping, valves       Image: Disposal field c/w process piping, valves       1       ea	2008 40 30	\$100,000 \$100,000 	2       2       4       deterioration to determine replacement timing/phasing.       Operations       Included above       5-10 Year         -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -
3       813       927 Deloume rd       Blairgowrie rd: Phase 2       F235-001-00       S       SS       S       66       S-SS-S-66         3       813       927 Deloume rd       Blairgowrie rd: Phase 2       F235-001-00       S       SS       CO       67       S-SS-CO-67         3       813       927 Deloume rd       Blairgowrie rd: Phase 2       F235-001-00       S       SS       SV       68       S-SS-SV-68	Sewermain pipe, 200mmPVC27mSewer cleanouts, SCO E1eaService connections (lots 35-76)1ea	2004         80         66           2004         40         26           2004         80         66	\$550         \$14,960           \$2,000         \$2,000           \$3,000         \$3,000	1       2       5       10+ Year         1       2       5       10+ Year         1       2       5       10+ Year
3       813       927 Deloume rd       Blairgowrie rd: Phase 15       60484147       S       SS       MH       69       S-SS-MH-69         3       813       927 Deloume rd       Blairgowrie rd: Phase 15       60484147       S       SS       VH       69       S-SS-MH-69	Sewer manhole, 2-3m depths (SMH 1-SMH 4)         4         ea           SCO 1, 2.5m depth         1         ea	2016         40         38           2016         40         38	\$3,000         \$3,000         \$3,000           \$8,000         \$32,000            \$2,000         \$2,000            \$550         \$179,520	1       2       5       10+ Year         1       2       5       10+ Year         1       2       5       10+ Year
3813927 Deloume rdBlairgowrie rd: Phase 1560484147SSSS71S-SS-S-713813927 Deloume rdBlairgowrie rd: Phase 1560484147SSSSV72S-SS-SV-72	Sewermain pipe, 200mm (SMH 1-SCO 1)       326       m         Service connections (SMH 1-SCO 1)       28       ea         Image: Connections (SMH 1-SCO 1)       Image: Connections (SMH 1-SCO 1)       1mage: Connections (SMH 1-SCO 1)         Image: Connections (SMH 1-SCO 1)       Image: Connections (SMH 1-SCO 1)       1mage: Connections (SMH 1-SCO 1)         Image: Connections (SMH 1-SCO 1)       Image: Connections (SMH 1-SCO 1)       1mage: Connections (SMH 1-SCO 1)         Image: Connections (SMH 1-SCO 1)       Image: Connections (SMH 1-SCO 1)       1mage: Connections (SM 1-SCO 1)       1mage: Connections (SM 1-SCO 1)         Image: Connections (SM 1-SCO 1)       Image: Connections (SM 1-SCO 1)       1mage: Connections (SM 1-S	2016     80     78       2016     80     78	\$550         \$179,520           \$3,000         \$84,000	1     2     5     10+ Year       1     2     5     10+ Year       I     10+ Year     10+ Year
4         813         927 Deloume rd         Boompond rd: Phase 1A         C438 001 02 02         S         SS         MH         73         S-SS-MH-73	SMH R, 3.5m depth 1 ea	1997 40 19	\$8,000 \$8,000 Older areas of Mill Springs collection system experiencing I&I issues	Assess/Inspect older sections of Mill Spring collection system for sources of I&I to determineAssess/Inspect older sections of Mill OperationsAssess/Inspect older sections of Mill Spring collection system for sources of Spring collection system for sources of 
				rehabilitation/replacement timing/phasing. Assess/Inspect older sections of Mill
4 813 927 Deloume rd Boompond rd: Phase 1A C438 001 02 02 S SS CO 74 S-SS-CO-74	SCO C, 2m depth 1 ea	1997 40 19	\$2,000 \$2,000 Older areas of Mill Springs collection system experiencing I&I issues	224Spring collection system for sources of IAL to determineOperationsIncluded above5-10 Year
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4 813 927 Deloume rd Boompond rd: Phase 1A C438 001 02 02 S SS S 75 S-SS-S-75	Sewermain pipe, 200mm 25 m	1997 80 59	\$550 \$13,805 Older areas of Mill Springs collection system experiencing I&I issues	224Spring collection system for sources of I&I to determine rehabilitation/replacementOperationsIncluded above5-10 Year
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4 813 927 Deloume rd Boompond rd: Phase 1A C438 001 02 02 S SS SV 76 S-SS-SV-76	Service connections (SMH R-SCO C) 6 ea	1997 80 59	\$3,000 \$18,000 Older areas of Mill Springs collection system experiencing I&I issues	2     2     4     I&I to determine rehabilitation/replacement     Operations     Included above     5-10 Year
Image: Antiperiod of the sector of the sec	Sewermain pipe, 150mmImage: Connections (lots 78-91)Image: Connections (lots 78-91) <th< td=""><td>2006         80         68           2006         80         68</td><td>\$500         \$52,550            \$3,000         \$15,000</td><td>Image: Image: /td></th<>	2006         80         68           2006         80         68	\$500         \$52,550            \$3,000         \$15,000	Image:
Image: Note of the system         Im	Image: sewermain pipe, 200mmImage: sewermain pipe, 50mmImage: sewerm	2006         80         68           2006         80         68	\$550     \$103,180       \$400     \$57,360	Image: Mark Solution         Image: Ma
5         813         927 Deloume rd         Bucktail rd: Phase 6         F235-006-00         S         SS         MH         81         S-SS-MH-81           5         813         927 Deloume rd         Bucktail rd: Phase 6         F235-006-00         S         SS         MH         81         S-SS-MH-81           5         813         927 Deloume rd         Bucktail rd: Phase 6         F235-006-00         S         SS         SV         82         S-SS-SV-82	Sewer manhole, SMH A-D, 1.2-3.8m depths         4         ea           Service connections (lots 102-110)         9         ea	2006         40         28           2006         80         68           2008         90         70	\$400         \$37,500           \$8,000         \$32,000           \$3,000         \$27,000           \$550         \$69,080	1       2       5       10+Year         1       2       5       10+Year         1       2       5       10+Year
5       813       927 Deloume rd       Bucktail rd: Phase 8       F235-008-00       S       S       S       83       S-SS-S-83         5       813       927 Deloume rd       Bucktail rd: Phase 8       F235-008-00       S       SS       CO       84       S-SS-CO-84         5       813       927 Deloume rd       Bucktail rd: Phase 8       F235-008-00       S       SS       CO       84       S-SS-CO-84         5       813       927 Deloume rd       Bucktail rd: Phase 8       F235-008-00       S       SS       SV       85       S-SS-SV-85	Sewermain pipe, 200mmPVC126mSCO A, 1.2m depthCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	2008         80         70           2008         40         30           2008         80         70	\$550         \$69,080           \$2,000         \$2,000           \$3,000         \$12,000	1     2     5     10+ Year       1     2     5     10+ Year       1     2     5     10+ Year

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SMH B, 2, 50 mmSewer manhole, SMH B, 1, 5m depthImage: Sewer manhole, SMH B, 2, 50 mmSewer manhole, SMH B,D,E, 1, 5m depthImage: Sewer manhole, SMH B, 2, 50 mmSewer manhole, SMH A, B, D, E, 15m depthImage: Sewer manhole, SMH B, S, C, F, 5Sewer manhole, SMH B, A, B, D, E, FImage: Sewer manhole, SMH B, S, C, F, 5Sewer manhole, SMH B, S, C, F, 5Image: Sewer manhole, SMH B, S, C, F, 5Sewer manhole, SMH B, S, C, F, 5Image: Sewer manhole, SMH B, S, C, C, FSewer manhole, SMH B, S, C, D, S, CImage: Sewer manhole, S, S C I, 3, 3 m depthsSewer manhole, SMH B, S, C, D, S, CImage: Sewer manhole, S, S C I, 3, 3 m depthsSewer ma                                                                                                                                                                                                                                                                                                                                                                                   
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S-SS-SV-148</td><td>Sewer manhole, SMH A-SMH C, 1.6m depthsImage: Sewer manhole, SMH A-SMH CSewer manhole, SMH A-SMH CImage: Sewer manhole, SMH A-SMH CSewer manhole, SMH B, D, E, F, 3-3 Sm depthsImage: Sewer manhole, SMH B, D, E, F, 3-3 Sm depthsSewer cleanouts, SCO A, C, 2m depthsImage: Sewer manhole, SMH B, D, E, F, 3-3 Sm depthsSewer cleanouts, SCO A, C, 2m depthsImage: Sewer manhole, SMH B, D, E, F, 3-3 Sm depthsSewer cleanouts, SCO A, C, 2m depthsImage: Sewer manhole, SMH B, D, E, F, 3-3 Sm depthSewer cleanouts, SCO A, C, 2m depthsImage: Sewer manhole, SMH B, D, E, F, 3-3 Sm depthSewer manhole, SMH B, D, E, F, 3-3 Sm depthImage: Sewer manhole, SMH B, D, E, F, 3-3 Sm depthSewer manhole, SMH B, D, E, F, 3-3 Sm depthImage: Sewer manhole, SMH B, D, SMH B, SMH</td><td>Image: Second /td><td>3       ea       2004         82       m       2004         3       ea       2004         3       ea       2004         4       ea       2008         2       ea       2008         103       m       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M,</td><td>Image: Second /td><td>3         ea         2004           82         m         2004           3         ea         2004           3         ea         2004           4         ea         2008           103         m         2008           103         m         2008           171         m         2008           18         ea         2008           114         m         2006           1         ea         2006           1         ea         2006           14         ea         2006           14         ea         2006           14         ea         2006           15         ea         2006           16         ea         2006           17         ea         2006           18         m         2006           198         m         2006           10         ea         2006           11         ea         2004           260         m         2004           148         m         2004           10         ea         2004           11<td>80         40         80         80         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     \$400            \$54,000            \$56,870            \$102,780            \$54,000            \$54,000            \$57,150            \$8,000            \$2,000            \$42,000            \$42,000            \$42,000            \$42,000            \$44,000            \$42,000            \$142,010            \$142,010            \$142,010            \$142,010            \$142,012            \$142,912            \$142,912            \$43,000            \$2,000            \$2,000            \$31,800            \$2,000            \$318,000            \$32,000</td><td>2       2       2       4         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5   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           \$102,780            \$54,000            \$54,000            \$57,150            \$8,000            \$2,000            \$42,000            \$42,000            \$42,000            \$42,000            \$44,000            \$42,000            \$142,010            \$142,010            \$142,010            \$142,010            \$142,012            \$142,912            \$142,912            \$43,000            \$2,000            \$2,000            \$31,800            \$2,000            \$318,000            \$32,000</td> <td>2       2       2       4         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5 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S-SS-SV-148</td><td>Sever manhole, SMH A-SMH C, L6m depths        Sever manhole, SMH A-SMH C        Sever manhole, SMH A-SMH C        Sever manhole, SMH A, SMH C, SAS M D        Sever manhole, SMH A, SMH C, SMH A, SMH C        Sever mannole, SMH A, SMH C, SMH A, S</td><td>Image: Second /td><td>3         ea         2004           82         m         2004           3         ea         2004           3         ea         2004           4         ea         2008           2         ea         2008           103         m         2008           171         m         2008           18         ea         2008           18         ea         2006           1         ea         2006           1         ea         2006           1         ea         2006           1         ea         2006           14         ea         2006           14         ea         2006           15         ea         2006           16         ea         2006           17         ea         2006           18         m 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S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-SV-132           S-SS-S-133           S-SS-S-135           S-SS-S-136           S-SS-SNH-137           S-SS-SNH-138           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SS-SV-141           S-SS-SS-SV-142           S-SS-SV-143           S-SS-SV-144           S-SS-SV-145           S-SS-SV-147           S-SS-SV-148                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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td=""><td>rehabilitation/replacement</td><td>I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I       I         I</td></t<>                                                                                                                                                                                                                                                                     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Phase 10Mcclaren rd: Phase 10Mcclaren rd: Phase 10Mcclaren rd: Phase 10Pratt rd: Phase 11P</td><td>F235-010-01         F235-010-01         F235-010-01         F235-010-01         F235-010-01         F235-010-01         F235-010-01         F235-005-00         F235-005-00         F235-005-00         F235-005-00         F235-005-00         F235-006-00         F235-006-00         F235-006-00         F235-006-00         F235-001-00         F235-001-02         F235-010-02         F235-010-02         F235-010-02         F235-010-02         F235-010-02</td><td>SSSMH117SSSS118SSSSV119SSSSV119SSSMH120SSSCO121SSSS122SSSS123SSSS124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV128SSSSV128SSSSV128SSSSV128SSSSV130SSSSV131SSSSV133SSSS133SSSS134SSSS140SSSS141SSSS142SSSS142SSSS142SSSS142SSSS144SSSS<t< td=""><td>S-SS-MH-120           S-SS-CO-121           S-SS-S-122           S-SS-S-123           S-SS-SV-124           S-SS-SV-127           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     \$2,000            \$40,000            \$2,000            \$2,000            \$44,000            \$44,000            \$15,000            \$12,050            \$142,912            \$44,820            \$44,200            \$44,000            \$44,000            \$44,000            \$44,800            \$44,800            \$44,800            \$44,800            \$599,000            \$515,840            \$516,000</td><td>2       2       4         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1     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S-SS-SV-148</td><td>Sever manhole, SMH A-SMH C, Lisn depthsImage SMH A-SMH CSever manhole, SMH A-SMH CImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSever cannole: SMH B,D,E,F, 33 SM depthImage SMH A-SMH CSGN A, 3m depthImage SMH A-SMH CSever cannole: SMH B,L, 1Sm depthImage SMH A-SMH CSever main pipe, 1S0mmImage SMH E, 1Sm depthSever main pipe, 200mmImage SMH E, 1SM depth&lt;</td><td>Image: Second 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    2       4         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5         1       2       5</td><td>rehabilitation/replacement</td><td></td></td></t<>                                                                                                                                                                                                         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      S-SS-S-135           S-SS-S-136           S-SS-SNH-137           S-SS-SNH-138           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SS-SV-141           S-SS-SS-SV-142           S-SS-SV-143           S-SS-SV-144           S-SS-SV-145           S-SS-SV-147           S-SS-SV-148                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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SMH CImage: SMH &amp; SMH CSWE SME MARKHONE, SMH &amp; SMH C, S</td><td>Image: Second /td><td>3         ea         2004           82         m         2004           3         ea         2004           3         ea         2004           4         ea         2008           2         ea         2008           103         m         2008           103         m         2008           103         m         2008           11         m         2008           13         ea         2008           14         ea         2006           1         ea         2006           14         ea         2006           14         ea         2006           14         ea         2006           15         ea         2006           16         ea         2004           17         ea         2004           18         m         2004           198         m         2004           10         ea         2004           11         ea         2004           12         ea         2004           13         ea         2015  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     \$45,265            \$30,000            \$32,000            \$400            \$56,870            \$5102,780            \$54,000            \$57,150            \$57,150            \$8,000            \$2,000            \$2,000            \$40,000            \$2,000            \$2,000            \$44,000            \$44,000            \$15,000            \$12,050            \$142,912            \$44,820            \$44,200            \$44,000            \$44,000            \$44,000            \$44,800            \$44,800            \$44,800            \$44,800            \$599,000            \$515,840            \$516,000</td><td>2224125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125</td><td>rehabilitation/replacement</td><td></td></t<>                                                                                                                                                      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     F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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           \$9,000            \$32,000            \$400            \$52,000            \$400            \$55,870            \$102,780            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$51,000            \$11,000            \$12,050            \$14,42,912            \$14,42,912            \$14,42,912            \$44,000            \$44,000            \$44,000            \$15,840            \$31,840            \$32,000      &lt;</td><td>2224125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125</td><td>rehabilitation/replacement</td><td></td></t<></td></t<>                                                                                                                                           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    927 Deloume rd           813 <td>Gatewheel rd: Phase 2Gatewheel rd: Phase 2Gillespie pl: Phase 9Gillespie pl: Phase 9Gillespie pl: Phase 9Gillespie pl: Phase 9Gillespie pl: Phase 5Glendoik way: Phase 5Glendoik way: Phase 5Glendoik way: Phase 5Glendoik way: Phase 6Glendoik way: Phase 2Kinnoull cres: Phase 2Kinnoull cres: Phase 2 (to STP)Kinnoull cres: Phase 2Kinnoull cres: Phase 10Marie rd: Phase 14Marie rd: Phase 14Marie rd: Phase 10Mcclaren rd: Phase 10Mcclaren rd: Phase 10Mcclaren rd: Phase 10Pratt rd: Phase 10/Pratt rd: Phase 13/14Pratt rd: Phase 10Tutor way: Phase 11</td> <td>F235-010-01           F235-010-01           F235-010-01           F235-010-01           F235-010-01           F235-010-01           F235-010-01           F235-010-01           F235-005-00           F235-005-00           F235-005-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-001-00           F235-001-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01</td> <td>SSSMH117SSSS118SSSSV119SSSSV119SSSSV121SSSCO121SSSS122SSSS123SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV124SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV131SSSSV132SSSSV133SSSS134SSSS134SSSS141SSSSV140SSSSV142SSSS142SSSS142SSSS144SSSS144SSSS144SSSS144SSSS144SSSS<t< td=""><td>S-SS-MH-120           S-SS-CO-121           S-SS-S-122           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-127           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-S-133           S-SS-SV-134           S-SS-SV-134           S-SS-SV-138           S-SS-SV-140           S-SS-SV-141           S-SS-SV-143           S-SS-SV-144           S-SS-SV-144           S-SS-SV-145           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SSS-MH-150           S-SS-SV-1</td><td>Sever manhole, SMH A SMH C, 16 m depthsImage: Source connections, SMH A SMH CSever connections, SMH A SMH CImage: Source connections, SMH A SMH CSever connections, SMH A SMH CImage: Source connections, SMH A SMH CSever connections, SMH A SMH CImage: Source connectionsSever connectionsImage: Source connectionsSever connections (SM A SMH C, 15m depthImage: Source connectionsSever connections (SM A SMH C, 15m depthImage: Source connectionsSever connections (SM A SMH C, 15m depthImage: Source connectionsSever connections (Image: Source connections (Image: Source connections)Image: Source connectionsSever connections (Image: Source connections (Image: Source connections)Image: Source connectionsSever connections 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       \$3,000         \$2,000         \$3,000         \$3,000         \$3,000</td><td>\$24,000            \$45,255            \$9,000            \$32,000            \$400            \$52,000            \$400            \$55,870            \$102,780            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$54,000            \$51,000            \$11,000            \$12,050            \$14,42,912            \$14,42,912            \$14,42,912            \$44,000            \$44,000            \$44,000            \$15,840            \$31,840            \$32,000      &lt;</td><td>2224125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125</td><td>rehabilitation/replacement</td><td></td></t<></td>                            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S-SS-S-133           S-SS-SV-134           S-SS-SV-134           S-SS-SV-138           S-SS-SV-140           S-SS-SV-141           S-SS-SV-143           S-SS-SV-144           S-SS-SV-144           S-SS-SV-145           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SSS-MH-150           S-SS-SV-1</td><td>Sever manhole, SMH A SMH C, 16 m depthsImage: Source connections, SMH A SMH CSever connections, SMH A SMH CImage: Source connections, SMH A SMH CSever connections, SMH A SMH CImage: Source connections, SMH A SMH CSever connections, SMH A SMH CImage: Source connectionsSever connectionsImage: Source connectionsSever connections (SM A SMH C, 15m depthImage: Source connectionsSever connections (SM A SMH C, 15m depthImage: Source connectionsSever connections (SM A SMH C, 15m depthImage: Source connectionsSever connections (Image: Source connections (Image: Source connections)Image: Source connectionsSever connections (Image: Source connections (Image: Source 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      | S-SS-MH-120           S-SS-CO-121           S-SS-S-122           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-SV-132           S-SS-SV-133           S-SS-SV-134           S-SS-S-135           S-SS-S-136           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-141           S-SS-SV-142           S-SS-SV-143           S-SS-SV-144           S-SS-SV-143           S-SS-SV-143           S-SS-SV-144           S-SS-SV-145           S-SS-SV-148           S-SS-SV-148           S-SS-SV-152           S-SS-SV-155           S-SS-SV-155           S-SS-SV-155                                                              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\$3,000         \$2,000         \$3,000         \$2,000         \$3,000         \$2,000         \$550         \$600         \$550         \$600         \$550         \$600         \$550         \$600         \$550         \$600         \$550         \$600         \$550         \$600         \$550         \$2,000         \$3,000         \$2,000         \$3,000         \$2,000         \$3,000         \$2,000         \$3,000         \$2,000         \$3,000         \$3,000         \$3,000</td> <td>\$24,000        </td> <td>2224125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125</td> <td>rehabilitation/replacement</td> <td></td>                                                                                                                                                                                                                                                                  
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F235-010-01           F235-010-01           F235-005-00           F235-005-00           F235-005-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-001-00           F235-001-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01</td> <td>SSSMH117SSSS118SSSSV119SSSSV119SSSSV121SSSCO121SSSS122SSSS123SSSS122SSSS123SSSS124SSSS124SSSS124SSSS125SSSS125SSSS126SSSS127SSSS128SSSS129SSSS129SSSS121SSSS129SSSS129SSSS129SSSS129SSSS131SSSS133SSSS134SSSS134SSSS134SSSS134SSSS134SSSS134SSSS141SSSS141SSSS142SSSS144SSSS144SSSS144&lt;</td> <td>S-SS-MH-120           S-SS-CO-121           S-SS-S-122           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-SV-132           S-SS-SV-133           S-SS-SV-134           S-SS-S-135           S-SS-S-136           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-141           S-SS-SV-142           S-SS-SV-143           S-SS-SV-144           S-SS-SV-143           S-SS-SV-143           S-SS-SV-144           S-SS-SV-145           S-SS-SV-148           S-SS-SV-148           S-SS-SV-152           S-SS-SV-155           S-SS-SV-155           S-SS-SV-155</td> <td>Sover mankale, SMM A SMM C, 1.0m depthsImage: SMM A SMM CSover mankale, SMM A SMM C, 2m againsImage: SMM A SMM CSover transfore, SMM A SMM C, 2m againsImage: SMM A SMM CSover transfore, SMM A SMM C, 2m againsImage: SMM A SMM CSover transfore, SMM A SMM C, 2m againsImage: SMM A SMM CSover transfore, SMM A SMM C, 2m againsImage: SMM A SMM CSovert demonst, SCD A, 2m againsImage: SMM A SMM CSovertransfore, SMM A SMM C, 2m againsImage: SMM A SMM CSovertransfore, SMM A SMM C, 2m againsImage: SMM A SMM CSovertransfore, SMM A SMM C, 2m againsImage: SMM A SMM CSovertransfore, SMM A SMM C, 2m againsImage: SMM A SMM CSovertransfore, SMM A SMM C, 2m againsImage: SMM A SMM CSMM A SMM C, SMM A SMM</td> <td>Image: Second /td> <td>3ea200482m200482m20043ea20044ea2008103m2008103m2008103m2008171m200818ea200614ea200611ea200614ea200615ea200616ea200617ea200618m2006198m200610ea200611ea200612ea200613ea200424m200425ea2004148m200415ea200416ea200417ea200418m200419m200410ea200411ea201512ea201013ea201014ea201015m201016ea201027ea201028m201519ea201110ea201020ea201021ea201022ea201023ea201024ea201025m</td> <td>80       40       80       80       40       40       40       40       80       80       80       80       80       80       80       80       80       80       80 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</td><td>2224125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125125</td><td>rehabilitation/replacement</td><td></td></td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | F235-010-01           F235-010-01           F235-010-01           F235-010-01     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       F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-001-00           F235-001-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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        F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-006-00           F235-001-00           F235-001-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01</td><td>SSSMH117SSSSV119SSSSV119SSSSV121SSSCO121SSSS122SSSS123SSSS123SSSSV124SSSSV124SSSSV124SSSSV124SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV128SSSSV131SSSSV132SSSSV132SSSSV133SSSS133SSSS133SSSS134SSSS134SSSS134SSSS141SSSS141SSSS142SSSS142SSSS142SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144&lt;</td><td>S-SS-MH-120           S-SS-CO-121           S-SS-S-123           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128   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S-SS-SV-141           S-SS-SV-142           S-SS-SV-143           S-SS-SV-144           S-SS-SV-143           S-SS-SV-144           S-SS-SV-145           S-SS-SV-147           S-SS-SV-148           S-SS-SV-148           S-SSS-SV-153           S-SS-SV-154</td><td>Sever man hole, SMH A SMH CImage: SMH A SMH CSever man hole, SMH A SMH CImage: SMH A SMH CSever man hole, SMH A SMH CImage: SMH A SMH CSever ratio Net contextors, SMH A SMH CImage: SMH A SMH CSever ratio Net contextors, SMH A SMH CImage: SMH A SMH CSever ratio Net contextors, SMH A SMH C A contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net contextorImage: SMH A SMH C A contextorSever ratio Net 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F235-001-00           F235-001-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-010-02           F235-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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        S-SS-SV-140           S-SS-SV-141           S-SS-SV-142           S-SS-SV-143           S-SS-SV-144           S-SS-SV-144           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-150           S-SS-SV-151           S-SS-SV-152           S-SS-SV-153           S-SS-SV-155           S-SS-SV-156           S-SS-</td><td>Seven marthale, SMI ASMIC, L.G., deglis     Image: Seven marthale, SMI ASMIC     Image: SMI ASMIC       Seven marthale, SMI ASMIC, L.G., deglis     Image: SMI ASMIC     Image: SMI ASMIC       Seven marthale, SMI ASMIC, S.G. ASMIC     Image: SMI ASMIC     Image: SMI ASMIC       Seven marthale, SMI ASMIC, S.G. 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    927 Deloume rd           813 <td>Gatewheel rd: Phase 2<br/>Gatewheel rd: Phase 2<br/>Gillespie pl: Phase 9<br/>Gillespie pl: Phase 9<br/>Gillespie pl: Phase 9<br/>Gillespie pl: Phase 9<br/>Gillendoik way: Phase 5<br/>Glendoik way: Phase 5<br/>Glendoik way: Phase 5<br/>Glendoik way: Phase 5<br/>Glendoik way: Phase 6<br/>Glendoik way: Phase 2<br/>Kinnoull cres: Phase 2 (to STP)<br/>Kinnoull cres: Phase 10<br/>Marie rd: Phase 10<br/>Marie rd: Phase 10<br/>Mcclaren rd: Phase 10<br/>Del to UME Phase 10<br/>Tutor way: Phase 10<br/>Tutor way: Phase 11<br/>Tutor way: Phase 11<br/>Tuto</td> <td>F235-010-01F235-010-01F235-010-01F235-010-01F235-010-01F235-005-00F235-005-00F235-005-00F235-006-00F235-006-00F235-001-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02<td>SSSMH117SSSSV118SSSSV119SSSCO121SSSS122SSSS122SSSSV124SSSSV124SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV123SSSSV128SSSSS123SSSSV128SSSSV128SSSSS133SSSSS133SSSS133SSSS133SSSS133SSSS134SSSS141SSSS141SSSS141SSSS141SSSS141SSSS141SSSS142SSSS141SSSS141SSSS141SSSS142<t< 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          \$44,000         I         I         I           \$44,000         <tdi< td=""><td>22224112511251125112512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512</td><td>rehabilitation/replacement</td><td></td></tdi<></td></td></td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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<td>SSSMH117SSSSV118SSSSV119SSSCO121SSSS122SSSS122SSSSV124SSSSV124SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV122SSSSV123SSSSV128SSSSS123SSSSV128SSSSV128SSSSS133SSSSS133SSSS133SSSS133SSSS133SSSS134SSSS141SSSS141SSSS141SSSS141SSSS141SSSS141SSSS142SSSS141SSSS141SSSS141SSSS142<t< td=""><td>S-SS-MH-120           S-SS-S-122           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-133           S-SS-SV-134           S-SS-SV-135           S-SS-SV-134           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-142           S-SS-SV-144           S-SS-SV-144           S-SS-SV-144           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-151           S-SS-SV-152           S-SS-SV-153           S-SS-SV-154           S-SS-SV-158           S-SS-SV-158           S-SS-S-SV-158           S-SS-S-</td><td>Source constructionSource construction<!--</td--><td>Image: Section of the section of t</td><td>aea200432ea20043ea20044ea2008103m2008103m2008103m2008103m2008111m200812ea2008131ea200614ea200615ea200616ea200617ea200618m2006198m200610ea200611ea200612ea200613ea200424m2004250m200414ea200415ea200416ea200417ea200418m200419m200410ea200411ea200412m201513ea201014ea201015m201016ea201017ea201018m201019m201020ea201021ea201022ea201023m201024m201025m201120ea201021ea&lt;</td><td>40         80         80         80         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80 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\$50,000         I         I         I           \$54,000         I         I         I           \$51,000         I         I         I           \$12,000         I         I         I           \$14,212         I         I         I           \$14,212         I         I         I           \$14,212         I         I         I           \$14,000         I         I         I           \$44,000         I         I         I           \$44,000         I         I         I           \$44,000         <tdi< td=""><td>22224112511251125112512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512551255125512</td><td>rehabilitation/replacement</td><td></td></tdi<></td></td>                                                                                                                                                                                                                                                     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<td>F235-010-01F235-010-01F235-010-01F235-010-01F235-010-01F235-005-00F235-005-00F235-005-00F235-006-00F235-006-00F235-006-00F235-001-00F235-001-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02<!--</td--><td>SSSMH117SSSSV118SSSSV119SSSSV121SSSS122SSSS122SSSS122SSSS122SSSS122SSSS122SSSS122SSSSV124SSSSV122SSSSV122SSSSV122SSSSV122SSSSV123SSSSV128SSSSV128SSSSV128SSSSV131SSSSV133SSSSV134SSSSV134SSSSV134SSSSV134SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV141SSSSV</td><td>S-SS-MH-120 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     S-SS-S-144      &lt;</td> <td>Series markers Med A MARCE Las regelts         Series markers Med A MARCE Med A MARCE           Series markers Med A MARCE Med A MARCE         Series markers Med A MARCE Med A MARCE           Series markers Med A MARCE Med A MARCE         Series markers Med A MARCE Med A MARCE           Series markers Med A MARCE Med A MARCE         Series markers Med A MARCE Med A MARCE Med A MARCE           Series markers Med A MARCE MED A MA</td> <td>Image: Section of the section of t</td> <td>3ea200432m20043ea20044ea20082ea2008103m2008111ma2008112ea2006114ma200611ea200611ea200611ea200612ea200613ea200614ea200615ea200616ea200617ea200618m200419ea200610ea200611ea200412m200413ea2004148m2004149m2004150m200416ea200417ea201518m201619m201610ea201011ea201012ea201013ea201014ea2011156m201619ea201110ea201111ea201112ea201013ea201114ea201115m201616ea201117ea201118m&lt;</td> <td>40         80         80         80         80         40         80         40         80         40  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ROW A)         Pratt rd: Phase 13/14         Pratt rd: Phase 13/14         Pratt rd: Phase 11         Tutor way: Phase 10         Tuto</td> <td>F235-010-01F235-010-01F235-010-01F235-010-01F235-010-01F235-005-00F235-005-00F235-005-00F235-006-00F235-006-00F235-001-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-01-00F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02F235-010-02<td>NNNSSSSSSSV118SSSSV119SSSSV120SSSCO121SSSS122SSSS122SSSS122SSSS122SSSS122SSSSV124126SSSSV128SSSSS129SSSSS129SSSSS121SSSS122SSSS122SSSS122SSSS122SSSS122SSSS122SSSS123SSSS123SSSS133SSSS134SSSS134SSSS134SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS145SSSS145SSSS<t< td=""><td>S-SS-MH-120           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-SV-133           S-SS-S-S-134           S-SS-SNH-137           S-SS-SNH-138           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-142           S-SS-SV-144           S-SS-SV-144           S-SS-SV-144           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-152           S-SS-SV-152           S-SS-SV-153           S-SS-SV-154           S-SS-SV-158           S-SS-SV-158           S-SS-S-S-161           S-SS</td><td>Image: Sum stands (SMI Addition List or set is<br/>concerning age 200 an 200 at 2</td><td>Image: Section of the section of t</td><td>3ea200482m200482m20043ea20044ea2008103m2008103m2008103m2008114ma200611ea200611ea200611ea200611ea200612ea200613ea200614ea200615ea200616ea200617ea200618m2006198m200610ea200611ea200612ea200613ea2004148m2004148m200415ea200416ea200417ea200418m201519m201610ea201511ea201012ea201013ea201114ea201115m201616ea201017ea201118m201619ea201110m200411ea201112ea201113ea201114m<td>40         80         80         80         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         80         80         80         80         80         80         80         80         80         80         80         80         80      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\$34,000</td><td>22223133313331255125512551255125512551255125512551255175517551755175517551755175517551755177517751775177717771777177717771777177717771777177717771777177717771777177717</td><td>rehabilitation/replacement</td><td></td></td></td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Gatewheel rd: Phase 2         Gatewheel rd: Phase 9         Gillespie pl: Phase 9         Gillespie pl: Phase 9         Gillespie pl: Phase 9         Gillespie pl: Phase 5         Glendoik way: Phase 6         Kinnoull cres: Phase 2 (to STP)         Kinnoull cres: Phase 1         Marie rd: Phase 14         Marie rd: Phase 14         Marie rd: Phase 10         Mcclaren rd: Phase 10         Mcclaren rd: Phase 10         Mcclaren rd: Phase 10         Pratt rd: Phase 13/14 (incl. ROW A)         Pratt rd: Phase 13/14         Pratt rd: Phase 13/14         Pratt rd: Phase 11         Tutor way: Phase 10         Tuto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          
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<td>NNNSSSSSSSV118SSSSV119SSSSV120SSSCO121SSSS122SSSS122SSSS122SSSS122SSSS122SSSSV124126SSSSV128SSSSS129SSSSS129SSSSS121SSSS122SSSS122SSSS122SSSS122SSSS122SSSS122SSSS123SSSS123SSSS133SSSS134SSSS134SSSS134SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS145SSSS145SSSS<t< td=""><td>S-SS-MH-120           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-132          
S-SS-SV-133           S-SS-S-S-134           S-SS-SNH-137           S-SS-SNH-138           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-142           S-SS-SV-144           S-SS-SV-144           S-SS-SV-144           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-152           S-SS-SV-152           S-SS-SV-153           S-SS-SV-154           S-SS-SV-158           S-SS-SV-158           S-SS-S-S-161           S-SS</td><td>Image: Sum stands (SMI Addition List or set is<br/>concerning age 200 an 200 at 2</td><td>Image: Section of the section of t</td><td>3ea200482m200482m20043ea20044ea2008103m2008103m2008103m2008114ma200611ea200611ea200611ea200611ea200612ea200613ea200614ea200615ea200616ea200617ea200618m2006198m200610ea200611ea200612ea200613ea2004148m2004148m200415ea200416ea200417ea200418m201519m201610ea201511ea201012ea201013ea201114ea201115m201616ea201017ea201118m201619ea201110m200411ea201112ea201113ea201114m<td>40         80         80         80         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         40         80         80         80         80         80         80         80         80         80         80         80         80         80         80         80         80         80         80         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\$34,000</td><td>22223133313331255125512551255125512551255125512551255175517551755175517551755175517551755177517751775177717771777177717771777177717771777177717771777177717771777177717</td><td>rehabilitation/replacement</td><td></td></td> | NNNSSSSSSSV118SSSSV119SSSSV120SSSCO121SSSS122SSSS122SSSS122SSSS122SSSS122SSSSV124126SSSSV128SSSSS129SSSSS129SSSSS121SSSS122SSSS122SSSS122SSSS122SSSS122SSSS122SSSS123SSSS123SSSS133SSSS134SSSS134SSSS134SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS144SSSS145SSSS145SSSS <t< td=""><td>S-SS-MH-120           S-SS-S-123           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-124           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-128           S-SS-SV-130           S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-SV-133           S-SS-S-S-134           S-SS-SNH-137           S-SS-SNH-138           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-142           S-SS-SV-144           S-SS-SV-144           S-SS-SV-144           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-152           S-SS-SV-152           S-SS-SV-153           S-SS-SV-154           S-SS-SV-158           S-SS-SV-158           S-SS-S-S-161           S-SS</td><td>Image: Sum stands (SMI Addition List or set is<br/>concerning age 200 an 200 at 2</td><td>Image: Section of the section of t</td><td>3ea200482m200482m20043ea20044ea2008103m2008103m2008103m2008114ma200611ea200611ea200611ea200611ea200612ea200613ea200614ea200615ea200616ea200617ea200618m2006198m200610ea200611ea200612ea200613ea2004148m2004148m200415ea200416ea200417ea200418m201519m201610ea201511ea201012ea201013ea201114ea201115m201616ea201017ea201118m201619ea201110m200411ea201112ea201113ea201114m<td>40         80         80 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     \$57,000            \$52,000            \$20,000            \$20,000            \$21,2000            \$22,000            \$24,2000            \$24,2000            \$24,000            \$24,000            \$24,000            \$24,000            \$21,000            \$24,000            \$44,000            \$44,000            \$44,000            \$34,000            \$34,000            \$34,000            \$34,000            \$34,000            \$34,000            \$34,000</td> <td>22223133313331255125512551255125512551255125512551255175517551755175517551755175517551755177517751775177717771777177717771777177717771777177717771777177717771777177717</td> <td>rehabilitation/replacement</td> <td></td>                                                                                                                                                                                                                                                                                                         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S-SS-SV-131           S-SS-SV-132           S-SS-SV-132           S-SS-SV-133           S-SS-S-S-134           S-SS-SNH-137           S-SS-SNH-138           S-SS-SV-140           S-SS-SV-140           S-SS-SV-140           S-SS-SV-141           S-SS-SV-142           S-SS-SV-144           S-SS-SV-144           S-SS-SV-144           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-148           S-SS-SV-152           S-SS-SV-152           S-SS-SV-153          
S-SS-SV-154           S-SS-SV-158           S-SS-SV-158           S-SS-S-S-161           S-SS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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                                                                                                                                                                                                                                                                                                                                                                              | \$14,000            \$345,265            \$32,000            \$32,000            \$56,000            \$55,870            \$55,870            \$52,000            \$57,000            \$57,000            \$52,000            \$20,000            \$20,000            \$21,2000            \$22,000            \$24,2000            \$24,2000            \$24,000            \$24,000            \$24,000            \$24,000            \$21,000            \$24,000            \$44,000            \$44,000            \$44,000            \$34,000            \$34,000            \$34,000            \$34,000            \$34,000            \$34,000 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          S-SS-SV-143           S-SS-SV-144           S-SS-SV-152           S-SS-SV-152           S-SS-SV-153           S-SS-SV-154           S-SS-SV-152           S-SS-SV-153           S-SS-SV-154           S-SS-S-S-16</td><td>Secure strating, 2010, 3.04.1.4.00.1         Image: 2010, 3.04.1.4.00.1           Secure strating, 2010, 3.04.1.4.00.1         Image: 2010, 3.04.1.4.00.1           Secure strating, 2010, 3.04.1.4.0.1         Image: 2010, 3.04.1.4.0.1           Secure strating, 2010, 3.04.1.4.0.1.1         Image: 2010, 3.04.1.4.0.1.1           Secure strating, 2010, 3.04.1.4.0.1.1         Image: 2010, 3.04.1.4.0.1.1           Secure strating, 2010, 3.04.1.4.0.1.1         Image: 2010, 3.04.1.4.0.1.1           Secure strating, 2010, 3.04.1.4.0.1.1         Image: 2010, 3.04.1.1           Secure strating, 2010, 3.04.1.1.1.1.1         Image: 2010, 3.04.1.1           Secure strating, 2010, 3.04.1.1.1.1.1.1.1         &lt;</td><td>Image: Section of the section of 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S32,000             S4600             S56,870             S4600             S45,000             S57,150             S5,000             S42,000             S42,000             S42,000             S42,000             S42,000             S42,000             S42,000             S42,000             S43,180             S44,000             S44,000             S43,000             S43,800             S43,800             S43,800             S43,800             S43,800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
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34 813	927 Deloume rd	PRATT ROAD	GIS S SS S 188 S-SS-S-188	Sewermain, 150mm	PVC	98	m 2004	80	66	\$500	\$48,836	1	2 5	10+ Year
35 813	927 Deloume rd	PRATT ROAD	GIS S SS S 189 S-SS-S-189	Sewermain, 200mm (GIS minus catalogued length from F235-010-02 and 60301901)	PVC	0	m 2004	80	66	\$550	-\$55	1	2 5	10+ Year
36 813	927 Deloume rd	STUBBS ROAD	GIS         S         S         190         S-SS-S-190	Sewermain, 200mm	PVC	57	m 2004	80	66	\$550	\$31,320	1	2 5	10+ Year
87 813	927 Deloume rd	TUTOR WAY	GIS         S         S         191         S-SS-S-191	Sewermain, 200mm (GIS minus catalogued length from F235-010-02 and 60147531)	PVC	0	m 2004	80	66	\$550	-\$165	1	2 2 5	10+ Year
8 813	927 Deloume rd	Entire system	GIS S SS SV 192 S-SS-SV-192	Sewer Service Connections (GIS mnus record drawings)		5	ea 2004	80	66	\$3,000	\$15,000	1	2 5	10+ Year
8 813	927 Deloume rd	Entire system	GIS S SS CO 193 S-SS-CO-193	Sewer Cleanouts (GIS minus record drawings)		4	ea 2004	40	26	\$2,000	\$8,000	1	2 5	10+ Year



813 (1)



**813 (2)** 1 of 36



813 (3)



**813 (4)** 2 of 36



813 (5)



**813 (6)** 3 of 36



813 (7)



**813 (8)** 4 of 36



813 (9)



**813 (10)** 5 of 36



813 (11)



**813 (12)** 6 of 36





**813 (14)** 7 of 36



813 (15)



**813 (16)** 8 of 36



813 (17)



**813 (18)** 9 of 36



813 (19)



**813 (20)** 10 of 36



813 (21)



**<sup>813 (22)</sup>** 11 of 36



813 (23)



**813 (24)** 12 of 36



813 (25)



**813 (26)** 13 of 36



813 (27)



**813 (28)** 14 of 36



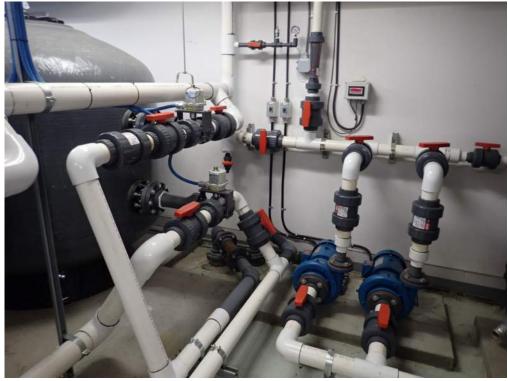
813 (29)



**813 (30)** 15 of 36



813 (31)



**813 (32)** 16 of 36



813 (33)



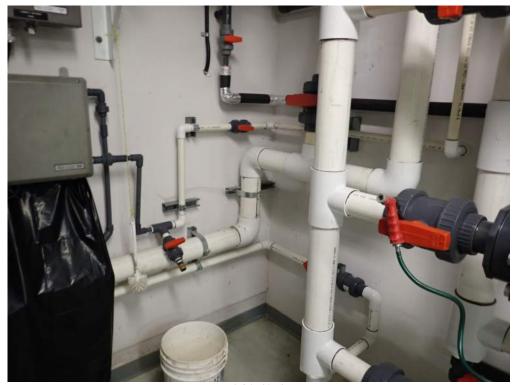
**813 (34)** 17 of 36



813 (35)



**813 (36)** 18 of 36



813 (37)



**813 (38)** 19 of 36



813 (39)



**813 (40)** 20 of 36



813 (41)



**813 (42)** 21 of 36



813 (43)



**813 (44)** 22 of 36



813 (45)



**813 (46)** 23 of 36



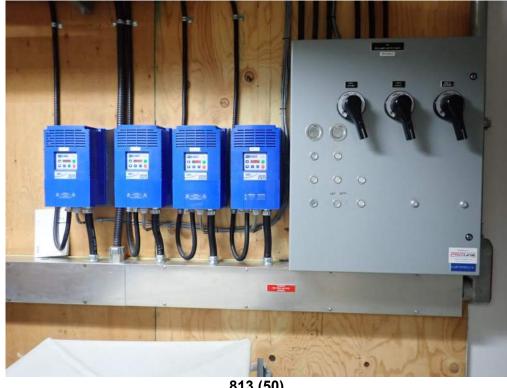
813 (47)



**813 (48)** 24 of 36



813 (49)



**813 (50)** 25 of 36



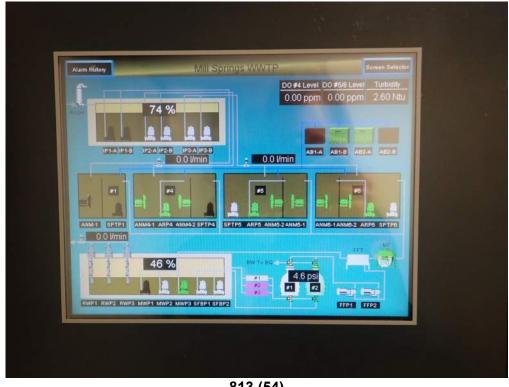
813 (51)



**813 (52)** 26 of 36



813 (53)



**813 (54)** 27 of 36



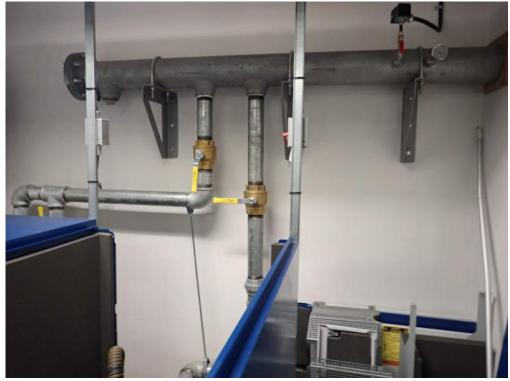
813 (55)



**813 (56)** 28 of 36



813 (57)



**813 (58)** 29 of 36



813 (59)



**813 (60)** 30 of 36



813 (61)



**813 (62)** 31 of 36



813 (63)



**813 (64)** 32 of 36



813 (65)



**813 (66)** 33 of 36



813 (67)



**<sup>813 (68)</sup>** 34 of 36



813 (69)



**813 (70)** 35 of 36



813 (71)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Mill Springs - Sewage Treatment Building - Functional Code 813

		0	dno		ē	c	OMPONENT	CONDITION ASSESSMENT	г					LIFECYCLE DA	TA	RECOMMEND	ATION			If recommended		Con the surrout			OPI	NION OF PR	ROBABLE C	OST		
BLDG Name	BLDG Type	Function Code	Level 1 Major Gr Elements	Level 2 Group Elements	Level 3 Individu Elements	ID	Location / Type	Photo Description & History	Condition	Performance	Yr New or Last Major Action Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	work not complete can the rate of deterioration be expected to increase ?	to a lorr of uro of	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit Subtotal	repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Mill Springs - Sewage Treatment Building	Sewage Treatment Building	813 4	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	<ol> <li>The foundation is comprised of cast-in-place concrete foundation with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.</li> <li>The age of the building has been assumed based on information provided.</li> </ol>	4	4	2013 21-Nov-1	7 MH	5	50	45	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1300	\$20	SF \$2	6,000	0%	5%	5%	\$29,000
Sewage Treatment		813 /	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103001 Standard S on Grade	lab Interior of Building At- Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	4	4	2013 21-Nov-1	7 MH	5	50	45	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1300	\$10	SF \$1	3,000	0%	5%	5%	\$15,000
Sewage Treatment	Sewage Treatment Building	813 /	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103006 Foundatior Drainage	Underground/ Perimeter Drains	<ol> <li>Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.</li> </ol>	4	4	2013 21-Nov-1	7 MH	5	10	5	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500	LS Ş	\$500	0%	0%	5%	\$1,000
Sewage Treatment	Sewage Treatment Building	813 4	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103006 Foundatior Drainage	Underground/ Perimeter Drains	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	4	4	2013 21-Nov-1	7 MH	5	50	45	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No								
Sewage Treatment		813 E	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	<ol> <li>The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation.</li> <li>No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.</li> </ol>	4	4	2013 21-Nov-1	7 MH	5	50	45	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1300	\$40	SF \$5	2,000	0%	5%	5%	\$58,000
Sewage Treatment	Sewage 1 Treatment Building	813 E	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted wood siding and wood trim are present on the exterior walls.</li> </ol>	3	3 .	2013 21-Nov-1	7 MH	5	10	2	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1400	\$8	SF \$1	1,200	0%	15%	5%	\$14,000
Sewage Treatment	Sewage Treatment Building	813 E	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	s B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted cementitious siding and wood trim are present on the exterior walls.</li> </ol>	4	4	2013 21-Nov-1	7 MH	5	50	45	The wood siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1400	\$35	SF \$4	9,000	0%	5%	5%	\$55,000
Sewage Treatment	Sewage Treatment Building	813 E	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1 Four painted metal doors are present on the building.	4	4 :	2013 21-Nov-1	7 MH	5	30	25	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	4	\$1,500	EA \$6	5,000	0%	5%	5%	\$7,000
Mill Springs - Sewage Treatment Building		813 E	B Shell	B20 Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/ Windows	1 Two windows are present in the building.	4	4	2013 21-Nov-1	7 MH	5	30	25	Replace windows at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$200	EA \$	\$400	0%	5%	5%	\$1,000
Mill Springs - Sewage Treatment Building	Sewage Treatment Building	813 E	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is a sloped assembly with wood shakes. MH understands that the roof is slatted to be replaced.</li> <li>The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.</li> </ol>	3	3	2013 21-Nov-1	7 MH	5	25	2	Replace the roof at the end of its service life. The timeline provided was taken from the information provided and should be confirmed. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	1500	\$8	SF \$1	2,000	0%	5%	5%	\$14,000
Sewage Treatment	Sewage 1 Treatment Building	813 E	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	The roof is standing seam metal roof. A snow guard is present over the doors.     The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	4	4 :	2013 21-Nov-1	7 MH	5	25	20	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$10	SF \$1	1,000	0%	10%	5%	\$2,000
Mill Springs - Sewage Treatment Building	Sewage 8 Treatment Building	813 0	C Interiors	C30 Interior Finishe	C3010 Wall Finishes	C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	<ol> <li>The interior gypsum and plywood walls and ceilings are painted.</li> </ol>	4	4	2013 21-Nov-1	7 MH	5	20	15	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$2,500	LS \$2	2,500	0%	0%	5%	\$3,000
Sewage Treatment		813 0	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	4	4	2013 21-Nov-1	7 MH	5	20	15	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$	200	0%	0%	5%	\$1,000

Cowichan Va	alley Regional D	istrict			
Facility Cond	lition Assessme	nt and Capita	l Plan		

racinty condition Assessment and capital rian
Mill Springs - Sewage Treatment Building - Functional Code 813

		ŝ	ents	-		COMPONENT		CONDITION ASSESSME	NT				LIFECYCLE DAT	TA	RECOMMEND	DATION			If recommended					OPINIO	N OF PROBAB	ILE COST			10-YEAR CA	PITAL PLAN					
3 Name	G Type ion Code	tajor Gro ments	oup Elem	vel 3 Individu: Elements		/ Type			ian	ance r Last ction	it Date d Bv	018	al le or ter val	me : to EOL Action			ty	Can this work be phased over multiple years ?	work not complete can the rate of	Will a failure in this system lead	Can the current condition adversely affec	: Ag	ate	tal or or Cost	ų	yancy .	5%	tal in 2017 Dollars	2018	2019 2	20 2021	2022	2023	024 2025	2026 2027
BLDC	BLD	Level 1 N Eler	ewel 2 Grc	Level 3 Elec		Location ,	Photo	Description & History	Conditi	Perform Yr New o Major A	65 es smer As sesse	Age in 2	Typical Life Cycle or Action Interval	Est. Ti emaining or Major J	tecommendation	Type	Priori	multiple years ?	deterioration be expected to increase ?	to a loss of use o the facility ?	the buildings security of safety	Ē	Unit Ra	Subto <sup>-</sup> Repair eplaceme	Consu	Contin- g	Tax	Total in Dolla	\$0	\$28,000	0 \$0	\$1,000	\$0	\$0 \$0	\$0 \$0
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	A Substructure	A10 Foundation	s A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundatio	ins 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walk. The foundation is concealed fro review, with the exception of some above grade foundation wa on some elevations. The age of the building has been assumed based on information provided.	m	4 2013	21-Nov-17 MH	1 5	50	45 1	he foundations are expected to remain erviceable for the life of the building. No apital expenses associated with this item re expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1300	\$20 S	F \$26,000	0%	5%	5%	\$29,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	A Substructure	A10 Foundation	A1030 Slab on Gra	de A103001 Standard on Grade	Slab Interior of Building At-Gra Slab-on-Grade	ade/ 1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4 2013	21-Nov-17 MI	1 5	50	r	The concrete slab-on-grade is expected to emain serviceable for the life of the uilding, with isolated repairs, if needed. No capital expenses associated with this tem are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1300	\$10 S	F \$13,000	0%	5%	5%	\$15,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	A Substructure	A10 Foundation	A1030 Slab on Gra	de A103006 Foundatio Drainage	n Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	4	4 2013	21-Nov-17 MH	I S	10	5 F r	teriodic camera inspection and isolated epairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500 L	s \$500	0%	0%	5%	\$1,000				\$1,000			
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	A Substructure	A10 Foundation	A1030 Slab on Gra	5e A103006 Foundatio Drainage	m Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be shutabled at the footing new. No issues related to fundation donated with an end of the facility staff. No information was available regarding the coping of the system to review for continuity.		4 2013	21-Nov-17 MH	1 5	50	k c r	he foundation drainage is expected to sta the life of the building. No major apalal expenditures are expected to be equired. totos: this should be updated with the essits of the foundation drainage review ecommended in A103006 Foundation rainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No														
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	8 Shell	B10 Superstruct	ure B10 Superstructure	e 810 Superstructure	Interior of Building/ Gene Superstructure	eral 1	The superstructure is comprised of wood framing on all four wa and roof trustes, supported on a cast-in-place concrete foundation. No settlement or other set of the support of the set of the set of the observed or reporter ed. There was no evidence or reports of long term leakage that would allude to conceiled structural damage.		4 2013	21-Nov-17 Mł		50	45 I 8 8	nterior protected structural components re expected to last the life of the wilding. No major capital expenditures re expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1300	\$40 S	F \$52,000		5%	5%	\$58,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementiti Siding	ous 1	Painted wood siding and wood trim are present on the exterior walls.	3	3 2013	21-Nov-17 MF	1 5	10	2 F	tepaint siding and trim. At the time of painting, replace sealant oints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1400	\$8 S	F \$11,200	0%	15%	5%	\$14,000		\$14,000					
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	B Shell	CB20 Exterior Enclosure	82010 Exterior Wa	lls 8201001 Exterior Enclosure	Exterior Walls/ Cementiti Siding	ous 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4 2013	21-Nov-17 Mł	I S	50	6	The wood siding is expected to last the life of the building. Note: isolated sealant and wood trim eplacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1400	\$35 S	F \$49,000	0%	5%	5%	\$55,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	B Shell	B20 Enclosure	E2030 Exterior Doc	rs B203001 Solid Doo	rs Exterior Walls/ Door	1	Four painted metal doors are present on the building.	4	4 2013	21-Nov-17 Mł	1 5	30	25 F	teplace doors at the end of their service fe.	Replacement	3 - Future Renewal	Yes	Yes	No	No	4	\$1,500 E.	A \$6,000	0%	5%	5%	\$7,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	B Shell	B20 Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/ Windows	1	Two windows are present in the building.	4	4 2013	21-Nov-17 MH	I S	30	25 F S	teplace windows at the end of their ervice life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$200 E.	A \$400	0%	5%	5%	\$1,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	8 Shell	D30 Roofing	83010 Roof Coverings	B301001 High Slop Roof Coverings	e Roof/Sloped Roof Asseml	bly 1	The roof is a sloped assembly with wood shakes. MH understands that the roof is slatted to be replaced. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	3	3 2013	21-Nov-17 MH	1 5	25	s	teplace the roof at the end of its service fe. The timeline provided was taken rom the information provided and hould be confirmed. Ongoing maintenance of the roof should nclude review of all exposed fasteners ind resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	1500	\$8 S	F \$12,000	0%	5%	5%	\$14,000		\$14,000					
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slop Roof Coverings	e Roof/Sloped Roof Assemi	bly 1	The roof is standing seam metal roof. A snow guard is present over the doors. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	4	4 2013	21-Nov-17 MH	1 5	25	20 F	teplace gutters at the end of their service ife.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$10 S	F \$1,000	0%	10%	5%	\$2,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	C Interiors	C30 Interior Fini	C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior gypsum and plywood walls and ceilings are painted	. 4	4 2013	21-Nov-17 MH	1 5	20	15 F	tepaint interiors as required. kote: a long service life has been included o reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$2,500 L	s \$2,500	0%	0%	5%	\$3,000							
Mill Springs - Sewage Treatment Building	Sewage 813 Treatment Building	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipme	ent	An exterior light is present on the building near the entrance.	4	4 2013	21-Nov-17 MH	I S	20	15 F	teplace lights at the end of their service fe.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 L	s \$200	0%	0%	5%	\$1,000							





Photo 2

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# Cowichan Valley Regional District



July 18, 2018

**Date Prepared** 

# 815 - Arbutus Ridge Sewer

Infrastructure Condition Assessment and Capital Plan 3717 Arbutus Drive North, Cobble Hill, BC

### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$12,939,002	
Number of Users	646	
Replacement Cost Per User	\$20,029	
Annual Replacement Cost (40 Years)	\$142,805	per year
Annual Replacement Cost (80 Years)	\$159,741	per year
10 Year Capital Plan Total	\$3,150,000	
10 Year Operations and Maintenance Plan Total	\$156,000	

#### **PROPERTY DESCRIPTION**

The Arbutus Ridge Sewer System started construction in 1987 and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	1987	Record Drawings (85065C, 85065J-5)
Wastewater Treatment Plant	1994	Record Drawings (85065B2)
Country Club Parkway	1994	Record Drawings (85065Y)
Greenside Place	2012	Record Drawings (85065-04)

### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

### **CONTACT INFORMATION**

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# 815 - Arbutus Ridge Sewer

Infrastructure Condition Assessment and Capital Plan 3717 Arbutus Drive North, Cobble Hill, BC

Date Prepared

July 18, 2018

### **REPORT NOTES**

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 8, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
	and Kieran Bertsch	
July 4, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD for
	and Kieran Bertsch	review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the
		following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		3) Include disclaimer on cost estimates
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New

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# 815 - Arbutus Ridge Sewer

Infrastructure Condition Assessment and Capital Plan 3717 Arbutus Drive North, Cobble Hill, BC

Date Prepared July 18, 2018

# **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

# Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0-11eal)	3						
	4						
Important (1 - 2 Year)	5						\$0
(1-21681)	6						
Short Term (2 - 5 Year)	7	1	ALL		Construct new MBR wastewater treatment in existing RBC chambers (scheduled), replace communications, and inspect/assess the condition of the equipment remaining in place and determine replacement timing/phasing.	\$3,000,000	\$3,150,000
	8	2	S-STP-DF-15	Capital Upgrade/New	Use raised mound as new disposal field (scheduled).	\$150,000	
	9						
	10						
Medium Term	11						\$0
(5 - 10 Year)	12						
						Total	\$3,150,000

# Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical	2						\$0
(0 - 1 Year)	3						
	4						
Important	5						\$0
(1 - 2 Year)	6						
	7	3	ALL	Operations	Inspect/assess Arbutus Dr south lift station for deterioration to determine replacement timing/phasing.	\$2,000	
Short Term	8	4	ALL	Operations	Inspect/assess Marine Vista lift station for deterioration to determine replacement timing/phasing.	\$2,000	
(2 - 5 Year)	9	5	ALL	Operations	Inspect/assess Crab Pot Lane lift station for deterioration to determine replacement timing/phasing.	\$2,000	\$6,000
	10						
	11						
	12						
	13	6 to 45	ALL	Operations	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	\$100,000	
Medium Term	14	8, 20, 28 and 39	As Noted	Operations	Inspect/assess forcemains for deterioration to determine replacement timing/phasing.	\$50,000	\$150,000
(5 - 10 Year)	15						
	16						
	17						
						Total	\$156,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

System: 815 Civic Address: 371 Geographic Location: Nor Customers: Para Use Asset ID	rs:	District (CVRD) Arbutus Ridge Sewer 646 646 Location		frastructure Condition Assessr		Asset Code				Asset Inventory		Current Year			\$12,939,002 \$20,029		Condition Assessment	Recommendations / Actio
1	Function Code 815	Address 3717 Arbutus Dr North	Location Sewage treatment plant	DWG Ref 85065B2	Major Minor S STP	Asset Code       or     Spec     ID     Asset Code       9     STP     1     S-STP-STP-1	Photo 26 to 40	Description       Make       Model         Sewage treatment plant building, Rotating Biological Contactor (RBC) chamber       Image: Contactor (RBC) chamber       Image: Contactor (RBC) chamber	el Materi	rial Quantity Quantity Unit Year 2 ea	r Installed 1994	Year Renewed     Service Life Expectancy       40	Est. Remaining Service Life 16	Unit Price Refer to Arbutus Ridge Sewer St	Replacement Value of Asset     Physical Condition       /stem Building Condition Assessment.	Level of Service Conditio		Probablity of Failure       Severity of Failure       Condition       Description         Construct new MBR waster       Construct new MBR waster
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		FTR 2 S-STP-FTR-2	30 to 32	Rotating Biological Contactor (RBC) unit		1 ea	1994	40	16	\$350,000	\$350,000			2 3 Chambers (scheduled), rep inspect/assess the condition in place and determine rep
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		PMP 3 S-STP-PMP-3		Footing perimeter drain pump, 1 phase, 0.5hp Flygt BS 401	)1	2 ea	1994	20	0	\$5,000	\$10,000			Construct new MBR waste 3 2 3 Construct new MBR waste chambers (scheduled), rep inspect/assess the condition
																		in place and determine re Construct new MBR waste chambers (scheduled), rep
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		PMP 5 S-STP-PMP-5		Sludge collection pump, 433 imp, 3 phase, 7.5hp       Flygt       CT 3127N	7MT	1 ea	1994	20	0	\$5,000	\$5,000			inspect/assess the conditi in place and determine re
1	815 :	3717 Arbutus Dr North	Sewage treatment plant	85065B2		PMP 6 S-STP-PMP-6		Sewage control pump, 473 imp, 3 phase, 1.7hp Flygt DP3067	57	2 ea	1994	20	0	\$5,000	\$10,000			Construct new MBR waster 3 2 3 chambers (scheduled), rep inspect/assess the conditi in place and determine re
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		P PMP 8 S-STP-PMP-8		Effluent scum return pump, 434 imp, 3 phase, 1700 rpm, 3.0 hp Flygt CS 3085 M		1 ea	1994	20	0	\$5,000	\$5,000			3 2 3 Construct new MBR waste chambers (scheduled), rep inspect/assess the conditi
																		in place and determine re Construct new MBR waste
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		ET 9 S-STP-ET-9	29, 33, 34	Primary scum and sludge collection chamber (balancing tank)		1 ea	1994	40	16	\$200,000	\$200,000			2 2 4 chambers (scheduled), rep inspect/assess the conditi in place and determine re
1	815 :	3717 Arbutus Dr North	Sewage treatment plant	85065B2	S STP	ET 10 S-STP-ET-10		Sewage control pumps and valves chamber c/w process piping, valves		1 ea	1994	40	16	\$20,000	\$20,000			2 2 4 Construct new MBR waster chambers (scheduled), reprint inspect/assess the condition in place and determine responses to the condition of the chamber of the condition of t
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		ET 11 S-STP-ET-11		Sludge collection pump and valves chamber		1 ea	1994	40	16	\$20,000	\$20,000			Construct new MBR waste chambers (scheduled), rep
																		Z     Z     4     inspect/assess the conditi       in place and determine re     Construct new MBR waster
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		COA 12 S-STP-COA-12		Sludge hoppers and piping		1 ea	1994	40	16	\$30,000	\$30,000			2 2 4 chambers (scheduled), reprint inspect/assess the condition in place and determine reprint the set of the
1	815	3717 Arbutus Dr North	Sewage treatment plant	85065B2		ET 13 S-STP-ET-13	29, 33, 34	Final effluent clarifier chamber		1 ea	1994	40	16	\$50,000	\$50,000			2 2 4 Construct new MBR waster chambers (scheduled), rep inspect/assess the condition
1	815	3717 Arbutus Dr North	Sewage treatment plant	Site Visit / Photos	S STP	COM 14 S-STP-COM-14		Communications (STP)		1 LS	1994	10	0	\$20,000	\$20,000 Poor	Does not meet standard		in place and determine re 3 2 3 Replace communications i plant (scheduled)
2	815		Arbutus ridge golf course	85065C		DF 15 S-STP-DF-15	2, 3	Effluent disposal field c/w process piping, valves			1987	40	9	\$20,000	\$20,000 Poor		Have had issues with break-out due to lack of drain rock under pipes	3 2 3 Use raised mound as new
3	815	3717 Arbutus Dr North 3717 Arbutus Dr North	Lift station, Arbutus dr south	Site Visit / Photos Site Visit / Photos		BLD 16 S-LS-BLD-16 PMP 17 S-LS-PMP-17	4 to 7 4, 5	Lift station building (Arbutus Dr south) Pump (Arbutus Dr south LS)			1987	40	9	\$300,000 \$5,000	\$300,000 Good \$10,000 Good	Meets standard Meets standard	Able to meet capacity, some I&I issues Able to meet capacity, users do not flush non-flushables	2     3     3     deterioration to determin       2     2     2     2     Inspect/assess Arbutus Dr
3	815	3717 Arbutus Dr North	Lift station, Arbutus dr south	Site Visit / Photos		COM 19 S-LS-PMIP-17	4, 5 4 to 6	Communications (Arbutus Dr south LS)			1987	10	0	\$20,000	\$10,000 Good \$20,000 Good	Meets standard Meets standard	Able to meet capacity, users do not hush non-hushables	323deterioration to determin323Inspect/assess Arbutus Dr deterioration to determin
3	815	3717 Arbutus Dr North	Lift station, Arbutus dr south	Site Visit / Photos		GEN 20 S-LS-GEN-20	7	Generator (Arbutus Dr south LS)		1 ea	1987	40	9	\$60,000	\$60,000 Good	Meets standard		2 2 4 Inspect/assess Arbutus Dr deterioration to determin
4	815	3717 Arbutus Dr North	Lift station, Marine Vista	Site Visit / Photos		BLD 21 S-LS-BLD-21	9 to 18	Lift station building (Marine Vista)		1 LS	1987	40	9	\$400,000	\$400,000 Good - some signs of pipe corrosion	Meets standard	Able to meet capacity (takes most of the flow)	2 3 Inspect/assess Marine Vist determine replacement til
4	815	3717 Arbutus Dr North	Lift station, Marine Vista	Site Visit / Photos	S LS	PMP 22 S-LS-PMP-22	13 to 15	Pump, 50 HP (Marine vista LS)		2 ea	1987	20	0	\$30,000	\$60,000 Good	Meets standard	Able to meet capacity, pumps operate in series	3 2 3 Inspect/assess Marine Vist determine replacement til
4	815	3717 Arbutus Dr North 3717 Arbutus Dr North		Site Visit / Photos Site Visit / Photos	S LS	COM         24         S-LS-COM-24           GEN         25         S-LS-GEN-25		Communications (Marine vista LS) Generator (Marine vista LS)			1987 2011	10	0	\$20,000 \$60,000	\$20,000 Good \$60,000 Good	Meets standard Meets standard		3 2 3 Inspect/assess Marine Vist determine replacement til
5	815	3717 Arbutus Dr North		Site Visit / Photos		BLD 26 S-LS-BLD-26		Lift station building (Crab Pot lane)			1987	40	9	\$300,000	\$300,000 Good	Meets standard	Able to meet capacity, some I&I issues	2 3 Inspect/assess Crab Pot La to determine replacement
5	815	3717 Arbutus Dr North	Lift station, Crab Pot Lane	Site Visit / Photos	S LS	PMP 27 S-LS-PMP-27	22, 22	Pump (Crab pot lane LS)		2 ea	1987	20	0	\$5,000	\$10,000 Good	Meets standard	Able to meet capacity, users do not flush non-flushables	3 2 3 Inspect/assess Crab Pot La to determine replacement
5	815	3717 Arbutus Dr North	Lift station, Crab Pot Lane	Site Visit / Photos	S LS	COM 29 S-LS-COM-29	20 to 22, 24	Communications (Crab pot lane LS)		1 LS	1987	10	0	\$20,000	\$20,000 Good	Meets standard		3 2 3 Inspect/assess Crab Pot La to determine replacement
5	815	3717 Arbutus Dr North	Lift station, Crab Pot Lane	Site Visit / Photos	S LS	GEN 30 S-LS-GEN-30	20, 22 to 24	Generator (Crab pot lane LS)		1 ea	1987	40	9	\$60,000	\$60,000 Good	Meets standard		2     2     4     Inspect/assess Crab Pot La to determine replacement
6 6	815		Near Sewage treatment plant Near Sewage treatment plant	85065B2 85065B2	S SS SS SS	MH         31         S-SS-MH-31           MH         32         S-SS-MH-32		Catch basin       Sanitary MH S2			1994 1994	40 40	16 16	\$8,000 \$8,000	\$8,000 \$8,000			224Inspect/assess the collecting determine replacement time2224224Inspect/assess the collecting determine replacement time
7	815	3717 Arbutus Dr North	Arbutus dr north (Ex.S1-S3, Ex. S5-S6) (Ratcliffe to Cedar cres.)	85065J-5	S SS	S 33 S-SS-S-33		Sewermain, 200mm		300 m	1987	80	49	\$550	\$165,000			2     2     4     Inspect/assess the collectidetermine replacement time
7 7	815 : 815 :		Arbutus dr north (Ex.S1-S3, Ex. S5-S6) Arbutus dr north	85065J-5 85065J-5	S SS	MH         34         S-SS-MH-34           CO         35         S-SS-CO-35		Sewer manhole (Ex.S1-S3, Ex. S5-S6)         Sewer cleanout (Ex. CO)			1987 1987	40 40	9 9	\$8,000	\$40,000 \$3,000			224Inspect/assess the collecting determine replacement time2224224Inspect/assess the collecting determine replacement time
8	815	3717 Arbutus Dr North		85065C	S SS	S 36 S-SS-S-36		Sewermain, 200mm			1987	80	49	\$550	\$90,932			2     2     4     Inspect/assess the collecting determine replacement times       2     2     4     Inspect/assess the collecting determine replacement times
8	815 : 815 :		Golf course to Arbutus dr north Arbutus parkway to Arbutus dr north	85065C 85065C	S SS	MH         37         S-SS-MH-37           S         38         S-SS-S-38		Sewer manhole (\$4, \$5)     Sewermain, 250mm         Sewermain, 250mm     SDR35	5 PVC		1987 1987	40 80	9 49	\$8,000	\$16,000 \$110,040			Z     Z     4     determine replacement til       2     2     4     Inspect/assess the collectil       determine replacement til     determine replacement til
8	815 : 815 :		Arbutus dr north to Sewage effluent disposal field (approx. hutchingson to arbutus dr north) Arbutus dr north	85065C 85065C	S SS	PP         39         S-FM-PP-39           S         40         S-SS-S-40		Forcemain, 200mm     SDR35	5 PVC		1987 1987	80 80	49 49	\$550 \$650	\$687,500 \$16,250			134Inspect/assess forcemains replacement timing/phasi224Inspect/assess the collection determine replacement timing
8	815		Arbutus dr north to Sewage effluent disposal field	85065C	S SS	MH 41 S-SS-MH-41		Sewer manhole (S25, S26)			1987	40	9	\$8,000	\$16,000			2     2     4     Inspect/assess the collectidetermine replacement time       2     2     4     Inspect/assess the collectidetermine replacement time
9	815	3717 Arbutus Dr North 3717 Arbutus Dr North		85065Y 85065Y	S SS	S         42         S-SS-S-42           MH         43         S-SS-MH-43		Sewermain, 200mm     SDR35       Sewer manhole (S2-S11), ~1.8-3m depths     Image: Constraint of the second secon			1994 1994	40	56 16	\$550 \$8,000	\$313,335 \$80,000			2     2     4     Repet, are replacement to determine replacement to determin
10 10	815 : 815 :	3717 Arbutus Dr North 3717 Arbutus Dr North	Country club parkway Country club parkway	85065Y 85065Y	S         SS           S         SS	S         44         S-SS-S-44           MH         45         S-SS-MH-45		Sewermain, 200mm     SDR35       Sewer manhole (S1), ~2m depth     Image: Constraint of the second	5 PVC		1994 1994	<u> </u>	56 16	\$550 \$8,000	\$22,000 \$8,000			2     2     4       2     2     4       2     2     4       lnspect/assess the collectidetermine replacement time
11	815	3717 Arbutus Dr North 3717 Arbutus Dr North		85065-04	S SS	MH 46 S-SS-MH-46		Ex. \$1,1050 mm, 4m depth         Image: Constraint of the second sec			1987 2012	40	9	\$8,000	\$8,000			2     2     4     Inspect/assess the collectidetermine replacement time       1     2     5
11 11 11	815 815 815	3717 Arbutus Dr North	Greenside pl. 0+144 Greenside pl. 0+161 Greenside pl. S04-S03-S02-Ex. S1	85065-04 85065-04 85065-04	S         SS           S         SS           S         SS	MH         47         S-SS-MH-47           MH         48         S-SS-MH-48           MH         49         S-SS-MH-49           S         50         S-SS-S-50		S03, 1050mm, 2.2m depth		1 ea 1 ea	2012 2012 2012	40 40 80	34 34 74	\$8,000 \$8,000 \$550	\$8,000 \$8,000 \$28,281			125125224Inspect/assess the collecting the collecting temperature to the collecting temperat
12	815 815	3717 Arbutus Dr North 3717 Arbutus Dr North		85065Y 85065Y	S SS	S         51         S-SS-S-51           MH         52         S-SS-MH-52		Sewermain, 200mm     SDR35       Sewer manhole (S12-S14,S23), ~1.8-3m depths     SDR35			1994 1994	80 40	56	\$550	\$81,510 \$32,000			Z     Z     4     determine replacement til       2     2     4       2     2     4       2     2     4
13	815	3717 Arbutus Dr North		GIS	S SS	S 53 S-SS-S-53		Sewermain, 200mm			1987	80	49	\$550	\$301,516			2     2     4     determine replacement til       2     2     4     Inspect/assess the collectil determine replacement til
14	815	3717 Arbutus Dr North		GIS	S SS	S 54 S-SS-S-54		Sewermain, 150mm			1987	80	49	\$500	\$50,721			2     2     4     Inspect/assess the collectidetermine replacement time
14	815	3717 Arbutus Dr North 3717 Arbutus Dr North		GIS		S         55         S-SS-S-55           PP         56         S-FM-PP-56		Sewermain, 200mm (GIS minus catalogued length from 85065J-5 and 85-65C)		554 m	1987 1987	80	49	\$550	\$304,460			2     2     4     Inspect/assess the collectidetermine replacement time       2     2     4     Inspect/assess forcemains       2     2     4     Inspect/assess forcemains
15	815	3717 Arbutus Dr North	ARBUTUS DRIVE SOUTH	GIS	S SS	S 57 S-SS-S-57		Forcemain, 150mm       Image: Constraint of the second secon		865 m	1987 1987	80	49	\$550	\$475,855			224replacement timing/phasi224Inspect/assess the collecti determine replacement timing/phasi2224224Inspect/assess forcemains replacement timing/phasi
15	815	3717 Arbutus Dr North 3717 Arbutus Dr North	ARBUTUS DRIVE SOUTH	GIS		PP         58         S-FM-PP-58           S         59         S-SS-S-59		Forcemain, unknown diameter (assume 200mm for replacement costing) (GIS minus catalogued length from 85065C)		0 m	1987	80	49	\$500	\$0			2 2 4 Inspect/assess the collecti
17	815	3717 Arbutus Dr North	CEDAR CRESCENT	GIS	S SS	S         60         S-SS-S-60		Sewermain, 200mm       Image: Comparison of the second secon		183 m	1987	80	49	\$550	\$100,689			2     2     4     Inspect/assess the collecting determine replacement time       2     2     4     Inspect/assess the collecting determine replacement time
18	815	3717 Arbutus Dr North	COUNTRY CLUB DRIVE	GIS	S SS	S 61 S-SS-S-61		Sewermain, 150mm		112 m	1987	80	49	\$500	\$55,849			2     2     4     Inspect/assess the collecting determine replacement times       2     2     4     Inspect/assess the collecting determine replacement times
18	815	3717 Arbutus Dr North 3717 Arbutus Dr North		GIS	S SS SS SS SS	S         62         S-SS-S-62           S         63         S-SS-S-63		Sewermain, 200mm (GIS minus catalogued length from 85065Y)		721 m	1987 1987	80	49 49	\$550	\$396,795 \$52,150			2     2     4     determine replacement tir       2     2     4     Inspect/assess the collection
20	815	3717 Arbutus Dr North		GIS		PP 64 S-FM-PP-64		Sewermain, 200mm (GIS minus catalogued length from 85065Y)		95 m	1987	80	49	\$500	\$120,000			2     2     4     determine replacement time       2     2     4     Inspect/assess forcemains replacement timing/phasi
20	815	3717 Arbutus Dr North	CRAB POT LANE	GIS	S SS	S 65 S-SS-S-65		Sewermain, 200mm		132 m	1987	80	49	\$550	\$72,339			2     2     4     Inspect/assess the collectidetermine replacement time       2     2     4     Inspect/assess the collectidetermine replacement time
21	815 815	3717 Arbutus Dr North 3717 Arbutus Dr North	FAIRWATS PLACE	GIS	S SS	S         66         S-SS-S-66           S         67         S-SS-S-67		Sewermain, 150mm		31 M	1987 1987	80	49 49	\$500	\$15,362 \$148,097			224Inspect, assess the constant determine replacement til224Inspect, assess the collectil determine replacement til
22	815	3717 Arbutus Dr North	GREENSIDE PLACE	GIS	S SS	S 68 S-SS-S-68		Sewermain, 200mm (GIS minus catalogued length from 85065-04)		40 m	1987	80	49	\$550	\$21,838			2 2 4 Inspect/assess the collectidetermine replacement time
23	815	3717 Arbutus Dr North		GIS		S 69 S-SS-S-69		Sewermain, 200mm		134 m	1987	80	49	\$550	\$73,622			2     2     4     Inspect/assess the collecting determine replacement time       2     2     4     Inspect/assess the collecting determine replacement time
24	815	3717 Arbutus Dr North 3717 Arbutus Dr North		GIS		S         70         S-SS-S-70           S         71         S-SS-S-71		Sewermain, 200mm		109 m	1987 1987	80	49 49	\$550 \$550	\$60,110 \$132,823			2     2     4     determine replacement time       2     2     4     Inspect/assess the collection
26	815	3717 Arbutus Dr North	HUTCHINSON ROAD MARINE DRIVE	GIS	S SS	S 72 S-SS-S-72		Sewermain, 200mm       Image: Comparison of the second secon		241	1987	80	49	\$500	\$110,365			2     2     4     determine replacement time       2     2     4     Inspect/assess the collection
26 26	815 : 815 :	3717 Arbutus Dr North 3717 Arbutus Dr North	MARINE DRIVE MARINE DRIVE	GIS	S SS	S         73         S-SS-S-73           S         74         S-SS-S-74		Sewermain, 200mm		856 m	1987 1987	80 80	49	\$550 \$700	\$470,796 \$24,902			224Inspect/assess the collectidetermine replacement time224Inspect/assess the collectidetermine replacement time224Inspect/assess the collectidetermine
27	815	3717 Arbutus Dr North		GIS	S SS	S 75 S-SS-S-75		Sewermain, 375mm       Image: Constraint of the sewermain, 375mm         Sewermain, 200mm       Image: Constraint of the sewermain, 200mm		30 m	1987	80	49	\$550	\$33,160			L     L     I     determine replacement time       2     2     4     Inspect/assess the collecting       determine replacement time     Inspect/assess the collecting     Inspect/assess the collecting
28	815	3717 Arbutus Dr North		GIS		PP         76         S-FM-PP-76		Forcemain, 150mm		471 m	1987	80	49	\$500	\$235,500			2     2     4     Inspect/assess forcemains replacement timing/phasi       2     2     4     Inspect/assess the collecti
28	815 815	3717 Arbutus Dr North 3717 Arbutus Dr North		GIS		S         77         S-SS-S-77           S         78         S-SS-S-78		Sewermain, 150mm		m	1987 1987	80	49 49	\$500 \$550	\$50,702 \$280,369			2     2     4     determine replacement til       2     2     4     Inspect/assess the collection
30	815	3717 Arbutus Dr North		GIS	S SS	S         70         555570           S         79         S-SS-579		Sewermain, 200mm       Image: Comparison of the second secon		510 111	1987	80	49	\$550	\$339,275			2     2     4     determine replacement till       2     2     4     Inspect/assess the collectil determine replacement till
31	815	3717 Arbutus Dr North	OCEAN VIEW CRESCENT	GIS	S SS	S 80 S-SS-S-80		Sewermain, 200mm			1987	80	49	\$550	\$451,762			2 2 4 Inspect/assess the collectindetermine replacement time
32	815	3717 Arbutus Dr North	PANORAMA RIDGE	GIS	S SS	S 81 S-SS-S-81		Sewermain, 200mm		249 m	1987	80	49	\$550	\$136,868			2 2 4 Inspect/assess the collecting determine replacement times and the

Reco	mmendations / Action Items Description	Type of Work	10 Year Capital Plan Replacement Cost	Timing	Comment/Question to be resolved
chan insp	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining		Refer to Arbutus Ridge Se \$3,000,000	ewer System B 2-5 Year	Building Condition Assessment.
in pl Cons chan	ace and determine replacement timing/phasing. struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and	Canital Ungrada (N	Included at a state	2-E Ver	
insp in pl Cons	ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing. struct new MBR wastewater treatment in existing RBC	Capital Upgrade/New	Included above	2-5 Year	
chan insp in pl	nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	2-5 Year	
chan insp in pl	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	2-5 Year	
chan insp in pl	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	2-5 Year	
chan insp	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	5-10 Year	
chan insp	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	5-10 Year	
chan insp	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	5-10 Year	
chan insp	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	5-10 Year	
chan insp	struct new MBR wastewater treatment in existing RBC nbers (scheduled), replace communications, and ect/assess the condition of the equipment remaining ace and determine replacement timing/phasing.	Capital Upgrade/New	Included above	5-10 Year	
Repl plan	ace communications in new wastewater treatment t (scheduled)	Capital Upgrade/New	Included above	2-5 Year	
Insp	raised mound as new disposal field (scheduled). ect/assess Arbutus Dr south lift station for	Capital Upgrade/New Operations	\$150,000	2-5 Year	
dete Insp	rioration to determine replacement timing/phasing.	Operations Operations	\$2,000 Included above	2-5 Year 2-5 Year	
Insp	rioration to determine replacement timing/phasing. ect/assess Arbutus Dr south lift station for rioration to determine replacement timing/phasing.	Operations	Included above	2-5 Year	
Insp	rioration to determine replacement timing/phasing. ect/assess Arbutus Dr south lift station for rioration to determine replacement timing/phasing.	Operations	Included above	5-10 Year	
	ect/assess Marine Vista lift station for deterioration to rmine replacement timing/phasing.	Operations	\$2,000	2-5 Year	
Insp	ect/assess Marine Vista lift station for deterioration to rmine replacement timing/phasing.	Operations	Included above	2-5 Year	
Insp	ect/assess Marine Vista lift station for deterioration to rmine replacement timing/phasing.	Operations	Included above	2-5 Year 10+ Year	
	ect/assess Crab Pot Lane lift station for deterioration etermine replacement timing/phasing.	Operations	\$2,000	10+ Year 2-5 Year	
Insp	ect/assess Crab Pot Lane lift station for deterioration etermine replacement timing/phasing.	Operations	Included above	2-5 Year	
	ect/assess Crab Pot Lane lift station for deterioration etermine replacement timing/phasing.	Operations	Included above	2-5 Year	
	ect/assess Crab Pot Lane lift station for deterioration etermine replacement timing/phasing.	Operations	Included above	5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000 \$100,000	5-10 Year 5-10 Year	
dete Insp dete	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	\$100,000 Included in \$100,000	5-10 Year 5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year	
dete Insp dete	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
Insp dete Insp	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess forcemains for deterioration to determine	Operations Operations	Included in \$100,000 \$50,000	5-10 Year 5-10 Year	
Insp dete Insp	acement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000	5-10 Year 5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
Insp dete	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year 5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
	ect/assess the collection system for sources of I&I and			10+ Year 10+ Year 10+ Year	
dete	rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year 5-10 Year	
dete Insp	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
Insp dete	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess forcemains for deterioration to determine	Operations	Included in \$100,000	5-10 Year	
repla Insp dete	acement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
repla	ect/assess forcemains for deterioration to determine acement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$50,000	5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000	5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
repla Insp	ect/assess forcemains for deterioration to determine acement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations Operations	Included in \$50,000 Included in \$100,000	5-10 Year 5-10 Year	
Insp dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
Insp dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
Insp dete	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations	Included in \$100,000	5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	
dete Insp	rmine replacement timing/phasing. ect/assess forcemains for deterioration to determine	Operations	Included in \$100,000 Included in \$50,000	5-10 Year 5-10 Year	
Insp	acement timing/phasing. ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
Incr	PCL/ASSess the collection system for courses and the				4
dete	ect/assess the collection system for sources of I&I and rmine replacement timing/phasing. ect/assess the collection system for sources of I&I and	Operations Operations	Included in \$100,000 Included in \$100,000	5-10 Year 5-10 Year	

33 815	3717 Arbutus Dr North PARK LANE	GIS	S SS S 82 S-SS-S-82	Sewermain, 150mm	105 m 1987	80 49	\$500	\$52,267	2 2 4 Inspect/a determin
34 815	3717 Arbutus Dr North PARKWAY PLACE	GIS	S SS S 83 S-SS-S-83	Sewermain, 150mm	89 m 1987	80 49	\$500	\$44,592	2 2 4 Inspect/a determine
35 815	3717 Arbutus Dr North PINE RIDGE COURT	GIS	S         SS         S         84         S-SS-S-84	Sewermain, 150mm	87 m 1987	80 49	\$500	\$43,251	2 2 4 Inspect/as determine
36 815	3717 Arbutus Dr North PINE RIDGE DRIVE	GIS	S SS S 85 S-SS-S-85	Sewermain, 150mm	77 m <sup>1987</sup>	80 49	\$500	\$38,392	Image: second
36 815	3717 Arbutus Dr North PINE RIDGE DRIVE	GIS	S SS S 86 S-SS-S-86	Sewermain, 200mm	313 m 1987	80 49	\$550	\$171,986	2 2 4 Inspect/as determine
37 815	3717 Arbutus Dr North PINE RIDGE PLACE	GIS	S SS S 87 S-SS-S-87	Sewermain, 150mm	89 m 1987	80 49	\$500	\$44,658	2 2 4 Inspect/as determine
38 815	3717 Arbutus Dr North RATCLIFFE ROAD	GIS	S         SS         S         88         S-SS-S-88	Sewermain, 200mm	127 m 1987	80 49	\$550	\$69,890	2 2 4 Inspect/a determine
39 815	3717 Arbutus Dr North RIDGE LANE	GIS	S         FM         PP         89         S-FM-PP-89	Forcemain, 50mm	33 m 1987	80 49	\$400	\$13,200	2 2 4 Inspect/ar
39 815	3717 Arbutus Dr North RIDGE LANE	GIS	S SS S 90 S-SS-S-90	Sewermain, 150mm	106 m 1987	80 49	\$500	\$53,144	Image: Constraint of the section of
39 815	3717 Arbutus Dr North RIDGE LANE	GIS	S         SS         S         91         S-SS-S-91	Sewermain, 200mm	97 m 1987	80 49	\$550	\$53,534	
40 815	3717 Arbutus Dr North SALTSPRING VIEW	GIS	S SS S 92 S-SS-S-92	Sewermain, 200mm	231 m 1987	80 49	\$550	\$127,171	2 2 4 Inspect/as determine
41 815	3717 Arbutus Dr North SEAVIEW PLACE	GIS	S SS S 93 S-SS-S-93	Sewermain, 200mm	69 m 1987	80 49	\$550	\$38,222	2 2 4 Inspect/as determine
42 815	3717 Arbutus Dr North SEAVIEW WAY	GIS	S SS S 94 S-SS-S-94	Sewermain, 150mm	148 m 1987	80 49	\$500	\$74,047	And the second secon
42 815	3717 Arbutus Dr North SEAVIEW WAY	GIS	S SS S 95 S-SS-S-95	Sewermain, 200mm	268 m 1987	80 49	\$550	\$147,278	2 2 4 Inspect/as determine
43 815	3717 Arbutus Dr North SPYGLASS HILL	GIS	S SS S 96 S-SS-S-96	Sewermain, 150mm	58 m 1987	80 49	\$500	\$28,999	2 2 4 Inspect/as determine
44 815	3717 Arbutus Dr North ST. ANDREWS LANE	GIS	S SS S 97 S-SS-S-97	Sewermain, 200mm (GIS minus catalogued length from 85065Y)	41 m 1987	80 49	\$550	\$22,337	2 2 4 Inspect/as determine
45 815	3717 Arbutus Dr North Entire system	GIS	S         SS         SV         98         S-SS-SV-98	Service Connections, Sewer	655 ea 1987	40 9	\$3,000	\$1,965,000	Image: second
45 815	3717 Arbutus Dr North Entire system	GIS	S SS MH 99 S-SS-MH-99	Sewer manholes (GIS minus record drawings)	189 ea 1987	40 9	\$8,000	\$1,512,000	2 2 4 Inspect/a determin
45 815	3717 Arbutus Dr North Entire system	GIS	S         SS         CO         100         S-SS-CO-100	Sewer Cleanouts (GIS minus record drawings)	25 ea 1987	40 9	\$3,000	\$75,000	2 2 4 Inspect/a determin
45 815 45 815	3717 Arbutus Dr North     Entire system       3717 Arbutus Dr North     Entire system	GIS	S         STP         STP         101         S-STP-STP-101           S         STP         DF         102         S-STP-DF-102	Treatment building (Update GIS quantity) Disposal field building (Update GIS quantity)	O         ea         1987           0         ea         1987           0         ea         1987	40 9 40 9	\$200,000 \$20,000	\$0 \$0	

L L	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing. Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
		Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess forcemains for deterioration to determine replacement timing/phasing.	Operations	Included in \$50,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	
	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	Operations	Included in \$100,000	5-10 Year	

FIE	LD INS	PECTION	•		UNRISON PERSPIRED	
	STEM:	Arbitis Rodge	Ser	DATE:	Nov. 24/17	
SYS	STEM DE:	815		PROJECT No.:	5170700	-
INS BY:	PECTED			CVRD STAFF PRESENT:		
1) ]	Type of Treat	ment System (Schema	tic) Disposel 6 D bove	Field		
	Cto be ry	ment System (Schema never wasted preced)	le D bove	s on		18

815 (1)



**815 (2)** 1 of 20

815 (3)



**815 (4)** 2 of 20



815 (5)



**815 (6)** 3 of 20



815 (7)

	A PROPERTY AND	Anime -
	LIFT STATION FIELD INSPECTION	MORRISON HERSHFIELD
	system: Arbutus Ridge Source system 8/5 Marine Vista. INSPECTED Adu 1) Site Conditions	DATE: Mow 24/17 PROJECT No.: 5170700 CVRD STAFF PRESENT: TOLL
	2) Building Conditions	
Y	3) not wet well: rioration of structure and hatch:	

815 Arbutus Ridge Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's



815 (9)



**815 (10)** 5 of 20



815 (11)



**815 (12)** 6 of 20



815 (13)



**815 (14)** 7 of 20



815 (15)



**815 (16)** 8 of 20



815 (17)



**815 (18)** 9 of 20

	-		and the second second
LIFT ST	ATION	TH: MO	RRISON HERSHFIELD
SYSTEM: SYSTEM CODE:	Arbertos Ridge Sever 815 Grap Pot. Allom	_ DATE: PROJECT No.:	Nov. 74/17 5170700
INSPECTED BY	Allon	CVRD STAFF PRESENT:	Tote
1) Site Condition	ons		
2) Building Con	ditions		

815 (19)



**815 (20)** 10 of 20



815 (21)



**815 (22)** 11 of 20



815 (23)



**815 (24)** 12 of 20

SEWAGE TREATMENT PLANT MORRISON HERSHFIELD ш FIELD INSPECTION Nov. 24/17 Arbitis Ridge Sever DATE: SYSTEM: Colf course. LOCATION: PROJECT No.: 5170700 815 SYSTEM CODE: Todd. CVRD STAFF PRESENT: Ada INSPECTED BY: 1) Type of Treatment System (Schematic) Disposed Hill old R. H. with wasted (to be represed) of (0 D boyes on in Lybisfilm (eDhoves an arm site. bisternettig to in runs beutefilled a 2 dai rah. 14 deard at la cloging drain prope 2) Site Conditions/Security 40 had issues to prealmant due to no dominate under pipes. 3) Condition of Structure:

815 (25)



**815 (26)** 13 of 20

815 (27)



**815 (28)** 14 of 20



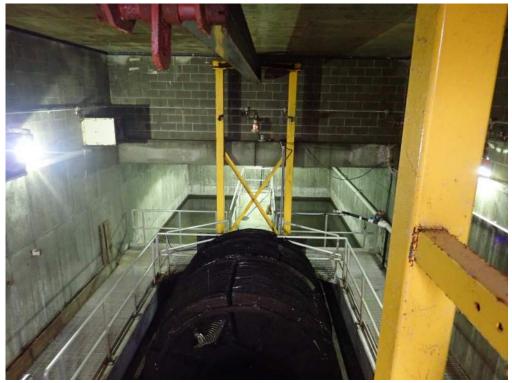
815 (29)



**815 (30)** 15 of 20



815 (31)



**815 (32)** 16 of 20



815 (33)



**815 (34)** 17 of 20



815 (35)



**815 (36)** 18 of 20



815 (37)



**815 (38)** 19 of 20



815 (39)



**815 (40)** 20 of 20

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Arbutus Ridge - Sewage Treatment Building (1 & 2) - Functional Code 815

			dno		al	co	MPONENT		CONDITION ASSESSMENT	г						LIFECYCLE DA	TA	RECOMMEN	DATION			If recommended						OPINION OF	PROBABLE	COST		
BLDG Name	BLDG Type	Function Code	Level 1 Major Gr	Level 2 Group Elements	Level 3 Individu Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	phased over	work not complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?		Quantity	Unit Rate	Unit	Subtotal Replair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	; 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	4	4	2008	21-Nov-17	мн	10	50	40	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1600	\$8	SF	\$12,800	0%	5%	5%	\$15,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	A Substructure	A10 Foundations	A1030 Slab on Gr	rade A103001 Standard Slal on Grade	b Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	2008	21-Nov-17	МН	10	50	40	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1600	\$8	SF	\$12,800	0%	5%	5%	\$15,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	A Substructure	A10 Foundations	A1030 Slab on Gr	rade A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	4	4	2008	21-Nov-17	МН	10	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	2	\$500	LS	\$1,000	0%	0%	5%	\$2,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	A Substructure	A10 Foundations	A1030 Slab on Gr	rade A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by faility staff. Nonformation was available regarding the scoping of the system to review for continuity.	4	4	2008	21-Nov-17	МН	10	50	43	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No								
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	B Shell	B10 Superstructure	B10 Superstructu	B10 Superstructure	Interior of Building/ Genera Superstructure	əl 1	The superstructure is comprised of masonry blocks with a wood framed roof. Some efflorescence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	2008	21-Nov-17	МН	10	50	40	Masonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	Repair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA	\$2,000	0%	10%	5%	\$3,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	B Shell	B20 Exterior Enclosure	B2010 Exterior W	/alls B201001 Exterior Enclosure	Exterior Walls/Wood Elements	1	Wood cladding and wood trim (included roof framing) is present through sections of the building (mainly gable ends). Some deterioration was noted in these elements.	3	3	2008	21-Nov-17	МН	10	12	2	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$1,500	EA	\$3,000	0%	10%	5%	\$4,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	B Shell	CB20 Exterior Enclosure	B2010 Exterior W	/alls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	4	4	2008	21-Nov-17	МН	10	50	40	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	210	\$20	SF	\$4,200	0%	10%	5%	\$5,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	Two painted metal doors are present on the building.	4	4	2008	21-Nov-17	МН	10	30	20	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	4	\$1,500	EA	\$6,000	0%	5%	5%	\$7,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly		The roof is sloped assembly which has been waterproofed with asphalt shingles. The roof drains via aluminum gutters to rain water leaders .	4	4		21-Nov-17		10	25	15	Replace asphalt shingle roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	No	Yes	No	No	1800	\$8	SF	\$14,400	0%	5%	5%	\$16,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	1	The roof is sloped assembly which has been waterproofed with a metal roof assembly. The roof drains via aluminum gutters to rain water leaders .	4	4	2008	21-Nov-17	МН	10	30	20	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$10	LF	\$1,000	0%	10%	5%	\$2,000
Arbutus Ridge - Sewage Treatment Building (1 & 2)	Sewage Treatment Building	815	C Interiors	D50 Electrical	D5020 Lighting a Branch Wiring	nd C301003 Gypsum Wallboard Finishes	D502002 Lighting Equipmer	nt	An exterior light is present on the building near the entrance.	4	4	2008	21-Nov-17	МН	10	20	10	Replace lights at the end of their service life.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Arbutus Ridge - Sewage Treatment Building (1 & 2) - Functional Code 815

		ď	hents	5	CC	OMPONENT		CONDITION ASSESSM	1ENT					LIFECYCLE DATA		RECOMMEN	DATION			If recommended	1	6			OPINION O	OF PROBABLE (	COST		1	LO-YEAR CAPI	TAL PLAN				
BLDG Name	BLDG Type	Function Code Level 1 Major Gro Elements	Level 2 Group Elerr	Level 3 Individu: Elements	ID	Location / Type	Photo De	escription & History	Condition	Performance Vr New or Last	Major Action Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority		work not complete can the rate of deterioration be expected to increase ?	e Will a failure in this system lead to a loss of use o the facility ?	condition	Quantity	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin- gency	5% Tax	Total in 2017 Dollars		019 20 000 \$1	2022 \$4,000	2023 \$0	2024 202 \$0 \$0	15 2026 2 0 \$0 \$1
Arbutus Ridge - Sewage Treatmen Building (1 & 2)		A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	rev	le foundation is comprised of cast-in-place concrete footing this concrete footing the concelled for undation is concealed fit view, with the exception of some above-grade foundation w some elevations.	rom	4 20	008 21-Nov	v-17 MH	10	50	40	The foundations are expected to remain rerviceable for the life of the building. No apilal expenses associated with this item are expected.	Not Applicable	Applicable	Yes	Yes	Yes	No	1600	\$8 SF	\$12,800	0%	5%	5% \$	\$15,000						
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	115 A Substructure	A10 Foundations	A1030 Slab on Gi	ade A103001 Standard Siz on Grade	ab Interior of Building At-Grade/ Slab-on-Grade	ob	he floor is concrete slab-on-grade. Isolated hairline cracking served. No evidence of major settlement or heaving was ported or observed.	was 4	4 20	008 21-Nov	v-17 MH	10	50	40	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this tem are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	1600	\$8 SF	\$12,800	0%	5%	5% \$	\$15,000						
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	15 A Substructure	A10 Foundations	A1030 Slab on Gi	ade A103006 Foundation Drainage	Underground/ Perimeter Drains	lev fac	rimeter drain pipes are assumed to be installed at the footin vel. No issues related to foundation drainage were noted by citry staff. No information was available regarding the scopir the system to review for continuity.	v V	4 20	21-Nov	v-17 MH	10	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	2	\$500 LS	\$1,000	0%	0%	5%	\$2,000	\$2	000				
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	815 A Substructure	A10 Foundations	A1030 Slab on Gr	ade A103006 Foundation Drainage	Underground/ Perimeter Drains	lev fac	vineted onin riges are assumed to be installed at the footism will brown shall be foundation an alread were noted by build citiys staff. No information was available regarding the scopir distribution to review for continuity.	-	4 20	108 21-Nov	v-17 MH	10	50		The foundation drainage is expected to ast the life of the building. No major capital expenditures are expected to be required. Vote: this should be updated with the evalus of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No													
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	8 Shell	B10 Superstructure	B10 Superstructu	re B10 Superstructure	Interior of Building/ General Superstructure	fra ho No ob:	ie superstructure is comprised of masonry blocks with a wo amed root. Some effloreicence was noted on the interior, wever, Mit understands that no active leaks are present, a settlement or other evidence of structural distress was served or reported. There was no evidence or reports of lo rm leakage that would allude to concealed structural damage	ing-	4 20	008 21-Nov	v-17 MH	10	50		Masonry structural components are expected to last the life of the building. A contingency budget has been included or isolated mortar joint replacement and esalant replacement throughout the inder block assemblies.	Repair Allowani	e 3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000 EA	\$2,000	0%	10%	5%	\$3,000						
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	Sewage 8 nt Treatment Building	15 B Shell	B20 Exterior Enclosure	B2010 Exterior W	alls B201001 Exterior Enclosure	Exterior Walls/Wood Elements	thr	ood cladding and wood trim (included roof framing) is prese rough sections of the building (mainly gable ends). Some terioration was noted in these elements.	ent 3	3 20	008 21-Nov	v-17 MH	10	12	2	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$1,500 EA	\$3,000	0%	10%	5%	\$4,000	\$4	000				
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	115 B Shell	CB20 Exterior Enclosure	B2010 Exterior W	alls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1 Per	rforated metal soffit is present at the roof overhangs.	4	4 20	008 21-Nov	v-17 MH	10	50		The perforated metal soffit is expected to ast the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	210	\$20 SF	\$4,200	0%	10%	5%	\$5,000						
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	Sewage 8 it Treatment Building	115 B Shell	B20 Enclosure	E2030 Exterior D	ors B203001 Solid Doors	Exterior Walls/ Door	1 Tw	wo painted metal doors are present on the building.	4	4 20	008 21-Nov	v-17 MH	10	30	20	Replace doors at the end of their service ife.	Replacement	3 - Future Renewal	Yes	Yes	No	No	4	\$1,500 EA	\$6,000	0%	5%	5%	\$7,000			\$4,000			
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	t15 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	asp	ie roof is sloped assembly which has been waterproofed wit phalt shingles. ie roof drains via aluminum gutters to rain water leaders .	h 4			v-17 MH		25	15	Replace asphalt shingle roofing at the end of its service life. Ongoing maintenance of the roof should nclude review of all penetrations when required.	d Replacement	3 - Future Renewal	No	Yes	No	No	1800	\$8 SF	\$14,400	0%	5%	5% \$	\$16,000						
Arbutus Ridge - Sewage Treatmen Building (1 & 2)	nt Treatment	15 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	me	he roof is sloped assembly which has been waterproofed wit etal roof assembly. he roof drains via aluminum gutters to rain water leaders .	ha 4	4 20	008 21-Nov	v-17 MH	10	30	20	Replace gutters at the end of their service ife.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$10 LF	\$1,000	0%	10%	5%	\$2,000						
Arbutus Ridge - Sewage Treatmen Building (1 & 2)		815 C Interiors	D50 Electrical	D5020 Lighting a Branch Wiring	d C301003 Gypsum Wallboard Finishes	D502002 Lighting Equipment	nt An	exterior light is present on the building near the entrance.	4	4 20	008 21-Nov	v-17 MH	10	20	10	Replace lights at the end of their service ife.	Repair Allowan	e 3 - Future Renewal	Yes	Yes	No	No	1	\$200 LS	\$200	0%	0%	5%	\$1,000						\$1



Photo 1



July 18, 2018

**Date Prepared** 

## 820 - Eagle Heights Sewer

Infrastructure Condition Assessment and Capital Plan 2703 Christopher Road, Koksilah, BC

#### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$8,779,457	
Number of Users	760	
Replacement Cost Per User	\$11,552	
Annual Replacement Cost (40 Years)	\$212,130	per year
Annual Replacement Cost (80 Years)	\$108,388	per year
10 Year Capital Plan Total	\$130,000	
10 Year Operations and Maintenance Plan Total	\$100,000	

#### **PROPERTY DESCRIPTION**

The Eagle Heights Sewer System started construction in 1976 and includes the phases outlined in the table below.

768

Development	Year Installed	Source
Collection System	1976	Record Drawings (002-012-00)
Lift Station	2003	Innova Report
Chaster Road Upgrades	2015	Record Drawings (121-22193-00)

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### **CONTACT INFORMATION**

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com



# 820 - Eagle Heights Sewer

Infrastructure Condition Assessment and Capital Plan 2703 Christopher Road, Koksilah, BC

Date Prepared

July 18, 2018

### **REPORT NOTES**

ws were completed on November 21-24,
Greenwood and Kieran Bertsch of MH.
ew of the systems we were accompanied by
ington and Mr. David Parker, who provided
system.
Andrea Kross from CVRD provided the
MH. Caleb Light from MH tabulated the
tructure in the developed area of the system
ase. The GIS items are the difference
cord drawings and the length of
abulated in the geodatabase.
assessment was issued to CVRD for review.
nventory assessment was issued to CVRD for
ory assessment was issued to CVRD during
2018 review meeting. Updates included the
near assets based on street names
ilding asset management seperately (to be
hris Raudoy)
aimer on cost estimates
ate tables for O&M tasks and Capital Plans
ons to Operations, Maintenance, Capital
apital Upgrade/New



Date Prepared July 18, 2018

# **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 (64))	3						
	4						
Important (1 - 2 Year)	5						\$0
(1-2168)	6						
Short Term	7	1	S-LS-ELC-7	Capital Renewal	Upgrade electrical in the lift station.	\$30,000	
(2 - 5 Year)	8	1	S-LS-PP-8	Capital Renewal	Replace process piping in the lift station (scheduled).	\$100,000	\$130,000
(2 - 5 Tear)	9						
	10						
Medium Term	11						\$0
(5 - 10 Year)	12						
						Total	\$130,000

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	ltem	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 fear)	3						
Important	4						
Important (1 - 2 Year)	5						\$0
(1-2 (ear)	6						
	7	1	S-LS-PMP-2 to S-LS-GEN-6	Operations	Inspect/assess the condition of the lift station, pumps, communications, flow meter, and generator, for deterioration to determine replacement timing/phasing.	\$20,000	
Short Term	8						\$20,000
(2 - 5 Year)	9						\$20,000
	10						
	11						
	12						
	13	2, 3, 5 to 35	ALL	Operations	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	\$80,000	
Medium Term	14						¢00.000
(5 - 10 Year)	15						\$80,000
	16						
	17						
						Total	\$100,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:Cowichan Valley Regional District (CVRD)System:820Eagle Heights SewerCivic Address:2703 Christopher rd		Infrastructure Condition Assessment									
Geographic Location:South of DuncanCustomers:Parcels:494Users:760				Current Year 2018	Total Replacement Value Value per user	\$8,779,457 \$11,552					
Asset ID     Location       Function Code     Address       1     820     2703 Christopher rd	Location       DWG Ref       Major       Minor       Spec       ID       Asset Code         Lift Station       Site Visit / Photos       S       LS       BLD       1       S-LS-BLD-1	Photo     Description       1 to 12     Lift station building	Make       Model       Material       Quantity       Quantity Unit       Year Installed       Year Renewe         Image: I	ed Service Life Expectancy Est. Remaining S 40 25	ervice Life Unit Price Refer to Eagle Heights Sewer System Building Condition Assessment.	Replacement Value of Asset Physical Condi	Condition Assessment         lition       Level of Service Condition       Demand Condition	Probablity of Failure Severity of Failure Condition	Recommendations / Action Items         Description       Type	10 Year Capital Plan         of Work       Budget Estimate       Timing         Refer to Eagle Heights       Sewer System Building       Condition Assessment.	Comment/Question to be resolved
1 820 2703 Christopher rd	Lift Station Site Visit / Photos S LS PMP 2 S-LS-PMP-2	6 Pump (LS)	2 ea 2003	20 5	\$5,000	\$10,000 Fair	Meets standard Able to meet capacity, high I&I, odours from neighbours	2 2 4	Inspect/assess the condition of the lift station, pumps, communications, flow meter, and generator, for deterioration to determine replacement timing/phasing.	rations \$20,000 5-10 Year	
1 820 2703 Christopher rd	Lift Station Site Visit / Photos S LS COM 4 S-LS-COM-4	3 to 5, 8 to 10 Communications (LS)	1 LS 2003	10 0	\$20,000	\$20,000 Fair	Meets standard	3 2 3	Assess/Inspect communication system for deterioration to determine replacement Op timing/phasing.	rations Included above 2-5 Year	
18202703 Christopher rd18202703 Christopher rd	Lift StationSite Visit / PhotosSLSFM5S-LS-FM-5Lift StationSite Visit / PhotosSLSGEN6S-LS-GEN-6	7     Flow meter       11, 12     Generator (LS)	Siemens       F M Magflo MAG5000       1       ea       2003         Generac       1       ea       2003	20 5 40 25	\$10,000 \$60,000	\$10,000 Fair \$60,000 Good	Meets standard Meets standard	3     1     4       2     2     4	Assess/Inspect generator for deterioration to	rations Included above 5-10 Year rations Included above 5-10 Year	
18202703 Christopher rd18202703 Christopher rd	Lift StationSite Visit / PhotosSLSELC7S-LS-ELC-7Lift StationSite Visit / PhotosSLSPP8S-LS-PP-8	3, 10     Electrical (LS)       NA     Process piping c/w valves, pipes, tees	Image: Constraint of the second se	20 5 30 15	\$20,000	\$20,000 Fair \$60,000 Poor	Does not meet standard Does not meet standard	3     2     3       3     3     3	Replace process piping in the lift station	I Renewal \$30,000 2-5 Year	
2 820 2703 Christopher rd	Entire drawing set     002-012-00     S     SS     MH     9     S-SS-MH-9	Sewer manholes (MH1-MH118)	118 ea 1976	40 0	\$8,000	\$944,000		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations \$80,000 5-10 Year	
38202703 Christopher rd38202703 Christopher rd	Building service, 0+018         121-22193-00         S         SS         MH         10         S-SS-MH-10           Building service, 0+028         121-22193-00         S         SS         MH         11         S-SS-MH-11	SMH B, 2m depth, 1050mm Ex. SMH 1, 2m depth, 1050mm	Image: Constraint of the second sec	40 37 40 12	\$8,000	\$8,000 \$8,000		1         2         5           2         2         4		rations Included above 5-10 Year	
3 820 2703 Christopher rd	Building service, 0+068121-22193-00SSSMH12S-SS-MH-12	Ex. SMH 2, 1050mm	1 ea 1990	40 12	\$8,000	\$8,000		2 2 4	timing/phasing.Inspect/assess the collection system for sourcesof I&I and determine replacementtiming/phasing.	rations Included above 5-10 Year	
38202703 Christopher rd38202703 Christopher rd	Building service, 0+110       121-22193-00       S       SS       CO       13       S-SS-CO-13         Building service, SMH A-SMH B       121-22193-00       S       SS       S       14       S-SS-S-14	SCO Sewermain, 200mm	Image: SDR35         PVC         18         m         2015	40 12 80 77	\$3,000	\$3,000 \$10.065		2 2 4 1 2 5	Inspect/assess the collection system for sources	rations Included above 5-10 Year	
3 820 2703 Christopher rd	Building service, SMH B-Ex. SMH 1         121-22193-00         S         SS         S         15         S-SS-S-15           Building service, Ex. SMH 1-Ex. SMH 2         121-22193-00         S         SS         S         16         S-SS-S-16	Sewermain, 200mm Sewermain, 200mm	SDR35         PVC         9         m         2015           SDR35         PVC         40         m         1976	80         77           80         38	\$550	\$5,170		1     2     5       2     2     4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
3 820 2703 Christopher rd	Building service, Ex. SMH 2-SCO       121-22193-00       S       SS       S       17       S-SS-S-17	Sewermain, 200mm	SDR35         PVC         42         m         1976	80 38	\$550	\$23,100		2 2 4	Inspect/assess the collection system for sources	rations Included above 5-10 Year	
48202703 Christopher rd48202703 Christopher rd48202703 Christopher rd48202703 Christopher rd	Trans Canada hwy / Chaster rd, 0+105         121-22193-00         S         SS         MH         18         S-SS-MH-18           Trans Canada hwy / Chaster rd, 0+160         121-22193-00         S         SS         MH         19         S-SS-MH-19           Trans Canada hwy / Chaster rd, 0+040         121-22193-00         S         SS         MH         19         S-SS-MH-19           Trans Canada hwy / Chaster rd, 0+040         121-22193-00         S         SS         MH         20         S-SS-MH-20	SMH A, 2.2m depth, 1050mm           SMH 14, 2m depth, 1050mm           SMH 15, 2.6m depth, 1050mm	Image: Constraint of the second se	40         37           40         37           40         37           40         37	\$8,000 \$8,000 \$8,000 \$8,000	\$8,000 \$8,000 \$8,000 \$8,000		1     2     5       1     2     5       1     2     5       1     2     5		10+ Year           10+ Year           10+ Year           10+ Year           10+ Year	
4         820         2703 Christopher rd           4         820         2703 Christopher rd	Trans Canada hwy / Chaster rd. SMH 15 - S       121-22193-00       S       SS       S       21       S-SS-S-21         Trans Canada hwy / Chaster rd. SMH A - SN       121-22193-00       S       SS       S       22       S-SS-S-22         Image: Construct of the ster rd. SMH A - SN       121-22193-00       S       SS       S       22       S-SS-S-22         Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Construct of the ster rd. SMH A - SN       Image: Conster rd. SMH A - SN       Image: Constru	Sewermain, 200mm Sewermain, 200mm	SDR35         PVC         70         m         2015           SDR35         PVC         52         m         2015           Image: SDR35         PVC         52         m         2015	80 77 80 77	\$550 \$550	\$38,225 \$28,655 \$0		1     2     5       1     2     5	Inspect/assess the collection system for sources	10+ Year       10+ Year       10+ Year	
5 820 2703 Christopher rd	ALLENBY ROAD GIS S SS S 23 S-SS-S-23	Sewermain, unknown diameter	1976 1,634 m 1,634 m	80 38	\$550	\$898,532		2 2 4 		rations Included above 5-10 Year	
6 820 2703 Christopher rd	BOAL ROAD S SS	Sewermain, unknown diameter	1976 221 m 1976	80 38	\$550	\$121,700		2 2 4 		rations Included above 5-10 Year	
7 820 2703 Christopher rd	BOTWOOD LANE BOTWO	Sewermain, 200mm	24 m 1976	80 38	\$550	\$13,108		2 2 4	of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
8 820 2703 Christopher rd	BOYS ROAD GIS S S 26 S-SS-26	Sewermain, unknown diameter	1976 551 m	80 38	\$550	\$303,318		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
9 820 2703 Christopher rd	BRANDT CRESCENT GIS S S S 27 S-SS-S-27	Sewermain, unknown diameter	1976 211 m	80 38	\$550	\$116,127		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
10 820 2703 Christopher rd	BRIGHT PLACE S SS S 28 S-SS-S-28	Sewermain, unknown diameter	1976 122 m	80 38	\$550	\$67,259		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
11 820 2703 Christopher rd	CHRISTOPHER ROAD CHRISTOPHER CHRI	Sewermain, 450mm	1976 m	80 38	\$700	\$164,889		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
12 820 2703 Christopher rd	CHRISTOPHER ROAD     Image: Market state	Sewermain, 500mm	1976	80 38	\$750	\$10,959		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
13 820 2703 Christopher rd	CHRISTOPHER ROAD GIS S S S 31 S-SS-S-31	Sewermain, unknown diameter	5 m	80 38	\$550	\$2,587		2 2 4	Inspect/assess the collection system for sources	rations Included above 5-10 Year	
14 820 2703 Christopher rd	Image: DOGWOOD ROAD     Image: Constraint of the second seco	Sewermain, unknown diameter	418 m 1976	80 38	\$550	\$229,808		2 2 4	Inspect/assess the collection system for sources	rations Included above 5-10 Year	
15 820 2703 Christopher rd	EAGLE HEIGHTS ROAD GIS S S S S 33 S-SS-S-33		110 m 1976	80 38	\$550	\$142,429		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op	rations Included above 5-10 Year	
16 820 2703 Christopher rd	Image: second	Sewermain, unknown diameter		80 38	\$550	\$91,555		2 2 4		rations Included above 5-10 Year	
17 820 2703 Christopher rd	ELEANOR STREET       GIS       I       I       I         Image: Street	Sewermain, unknown diameter	166 m 1976	80 38	\$550	\$208,753		2 2 4		rations Included above 5-10 Year	
18 820 2703 Christopher rd	FRANCIS STREET     GIS     I     I       Image: Street in the	Sewermain, unknown diameter	380 m 1976	80 38	\$550	\$496,426		2 2 4		rations Included above 5-10 Year	
19 820 2703 Christopher rd	GLENORA ROAD     GIS     I     I       Image: Solution of the second state of th	Sewermain, unknown diameter	903 m 1976	80 38	\$550	\$258,606		2 2 4	timing/phasing. Inspect/assess the collection system for sources of I&I and determine replacement Op	rations Included above 5-10 Year	
20 820 2703 Christopher rd	HYKAWY ROAD GIS IN CONTRACT OF	Sewermain, unknown diameter	470 m	80 38	\$550	\$105,869		2 2 4	timing/phasing. Inspect/assess the collection system for sources of I&I and determine replacement Op	rations Included above 5-10 Year	
	JACOB ROAD GIS GIS CONTRACTOR GIS CO	Sewermain, unknown diameter	192 m 1976	80 38	\$550	\$525,593			timing/phasing. Inspect/assess the collection system for sources	rations Included above 5-10 Year	
	KOKSILAH FRONTAGE ROAD     GIS     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S	Sewermain, unknown diameter	956 m	80 38	\$550	\$525,420			timing/phasing. Inspect/assess the collection system for sources		
	KOKSILAH ROAD       GIS       Image: Constraint of the second sec	Sewermain, unknown diameter	955     m	80 38					timing/phasing. Inspect/assess the collection system for sources	rations Included above 5-10 Year	
23 820 2703 Christopher rd	MEARNS ROAD GIS S S S 41 S-SS-S-41	Sewermain, 400mm	1976 m 1976	38 38	\$650	\$124,862			timing/phasing. Inspect/assess the collection system for sources	rations Included above 5-10 Year	
24   820   2703 Christopher rd	MILLER ROAD GIS S S S 42 S-SS-42	Sewermain, unknown diameter	1976 1,814 m 	80 38	\$550	\$997,530			timing/phasing. Inspect/assess the collection system for sources	rations Included above 5-10 Year	
25 820 2703 Christopher rd	MOUNTAIN VIEW CRESCENT     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S     S <t< td=""><td>Sewermain, unknown diameter</td><td>608     m     1976</td><td>80 38</td><td>\$550</td><td>\$334,391</td><td></td><td></td><td></td><td>rations Included above 5-10 Year</td><td></td></t<>	Sewermain, unknown diameter	608     m     1976	80 38	\$550	\$334,391				rations Included above 5-10 Year	
26 820 2703 Christopher rd	PHILLIPS ROAD GIS S S S 44 S-SS-544	Sewermain, unknown diameter	1976 391 m	80 38	\$550	\$214,928				rations Included above 5-10 Year	
27 820 2703 Christopher rd	POLKEY ROAD GIS S S S 45 S-SS-45	Sewermain, 150mm	1976 250 m	80 38	\$500	\$124,995			of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
28 820 2703 Christopher rd	POLKEY ROAD SS SS S 46 S-SS-46	Sewermain, 400mm	410 m 1976	80 38	\$650	\$266,631			timing/phasing.	rations Included above 5-10 Year	
29 820 2703 Christopher rd	POLKEY ROAD GIS S S 47 S-SS-5-47	Sewermain, unknown diameter	491 m 1976	80 38	\$550	\$270,034		2 2 4	timing/phasing.	rations Included above 5-10 Year	
30 820 2703 Christopher rd	ROBERTS ROAD     GIS     S     SS     S     48     S-SS-S-48	Sewermain, 400mm	287 m 1976	80 38	\$650	\$186,785		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
31 820 2703 Christopher rd	ROBERTS ROAD     Image: Market state sta	Sewermain, unknown diameter	1976	80 38	\$550	\$56,973		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
32 820 2703 Christopher rd	TRANS CANADA HIGHWAY     Image: Marking the second se	Sewermain, 450mm	1976 1976	80 38	\$700	\$37,086		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
33 820 2703 Christopher rd	TRANS CANADA HIGHWAY     Image: Constraint of the second sec	Sewermain, unknown diameter, assumed 200mm (GIS	minus catalogued length from 112-22193-00) 179 m 1976	80 38	\$550	\$98,251		2 2 4	Inspect/assess the collection system for sources of I&I and determine replacement Op timing/phasing.	rations Included above 5-10 Year	
34 820 2703 Christopher rd	Image: state s	Sewermain, unknown diameter	Image: Constraint of the second sec	80 38	550	\$89,838		2 2 4	Inspect/assess the collection system for sources	rations Included above 5-10 Year	
35 820 2703 Christopher rd	Image: constraint of the systemImage: constraint of the systemImage: constraint of the systemImage: constraint of the systemImage: constraint of the systemEntire systemGISSSSMH53S-SS-MH-53	Sewer Manholes (GIS minus record drawings)	49 ea 1976	40 0	\$8,000	\$392,000		2 2 4	Inspect/assess the collection system for sources	rations Included above 5-10 Year	

LIFT STATION FIELD INSPECTION	MORRISON HERSHFIELD
SYSTEM: Eagle Heights Sewer SYSTEM CODE: 820	DATE: Nov. 20/17 PROJECT No.: 5170700
INSPECTED BY:	CVRD STAFF PRESENT:
1) <u>Site Conditions</u> - obour for reightouring - fined one	
2) <u>Building Conditions</u> - site scient	
3) Condition of wet well:	
isible Deterioration of structure and hatch:	And in case of the local division in the local division of the loc

820 (1)





820 (3)



**820 (4)** 2 of 6



820 (5)



**820 (6)** 3 of 6



820 (7)



**820 (8)** 4 of 6



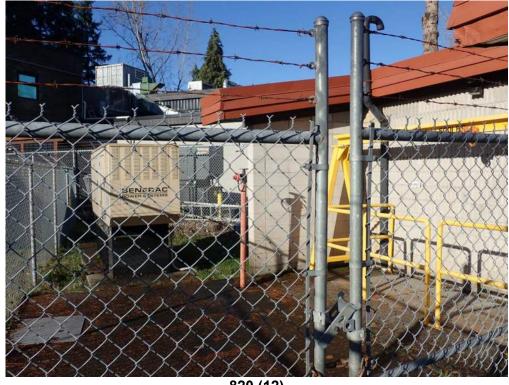
820 (9)



**<sup>820 (10)</sup>** 5 of 6



820 (11)



**820 (12)** 6 of 6

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Eagle Heights Sewage - Lift Station - Functional Code 820

			dno		a	CO	MPONENT		CONDITION ASSESSMEN	т		_		_		LIFECYCLE DAT	Ά	RECOMMEND	DATION	_		If recommended					_	OPINION OF	PROBABLE	COST		
BLDG Name	BLDG Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elements	Level 3 Individu: Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	phased over	work not complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Eagle Heights Sewage - Lift Statior	Sewage Treatment Building	820	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the building was not able to be confirmed and has been assumed.	4	4	1990	21-Nov-17	МН	28	50	32	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	550	\$20	SF	\$11,000	0%	5%	5%	\$13,000
Eagle Heights Sewage - Lift Statior	Sewage Treatment Building	820	A Substructure	A10 Foundations	A1030 Slab on Grad	le A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	1990	21-Nov-17	MH	28	50	32	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	550	\$10	SF	\$5,500	0%	5%	5%	\$7,000
Eagle Heights Sewage - Lift Statior	Sewage Treatment Building	820	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of masonry blocks with a wood framed root. Some efforesence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	1990	21-Nov-17	МН	28	50	32	Masomy structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	Repair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA	\$2,000	0%	10%	5%	\$3,000
Eagle Heights Sewage - Lift Statior		820		B20 Exterior Enclosure	B2010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/Wood Elements		Wood cladding and wood trim (included roof framing) is present through sections of the building. Some deterioration was noted in these elements.	3	3	1990	21-Nov-17	MH	28	12	2	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA	\$500	0%	10%	5%	\$1,000
Eagle Heights Sewage - Lift Statior		820	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	4	4	1990	21-Nov-17	МН	28	30	5	Replace door at the end of is service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA	\$1,500	0%	5%	5%	\$2,000
Eagle Heights Sewage - Lift Statior	Sewage Treatment Building	820	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof Assembly	1	The roof is sloped assembly which has been waterproofed with an SBS membrane. MH did not have roof access during this review. The roof drains via aluminum gutters to rain water leaders .	4	4	1990	21-Nov-17	MH	28	30	5	Replace roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	No	Yes	No	No	600	\$8	SF	\$4,800	0%	5%	5%	\$6,000
Eagle Heights Sewage - Lift Statior	Sewage Treatment Building	820	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	4	4	1990	21-Nov-17	МН	28	20	5	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

Cowichan Valley Regional District	
Facility Condition Assessment and Capital Plan	

Eagle Heights Sewage - Lift Station - Functional Code 820
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	9	sints	_	CO	MPONENT		CONDITION ASSESSMENT	л					LIFECYCLE DA	ТА	RECOMMEN	IDATION			If recommended	1				OPIN	IION OF PRO	OBABLE COS	г		10-YEAR CAPITAL PLAN								
BLDG Name BLDG Name	Function Code Level 1 Major Gro	Level 2 Group Elem	Level 3 Individua Elements	ID	Location / Type	Photo	Description & History	Condition	Performance Yr New or Last	Major Action Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	work not complete can the rate of deterioration be expected to increase ?	this system lead		antity	Unit Rate	Unit Subtotal	Replacement Cost	Consult.	5% Tax	Total in 2017 Dollars	2018 \$0	2019 \$1,000	2020 \$0	2021 \$0	2022 21 \$9,000 :	023 202 \$0 \$0	4 2025 \$0	2026 \$0	2027 \$1,000
Eagle Heights Sewage 8: Sewage - Lift Station Treatment Building	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations		The foundation is comprised of cash-in-place concrete footings with concrete foundation walls. The domation is concealed from review, with the exception of some above grade foundation wall on some elevation. The age of the building was not able to be confirmed and has been assumed.	1	4 199	90 21-Nov-	-17 MH	28	50	32	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes :	Yes	Yes	No	550	\$20	SF \$11	,000	0% 5	6 5%	\$13,000									
Eagle Heights Sewage 8 Sewage - Lift Station Treatment Building	A Substructure	A10 Foundations	A1030 Slab on C	rade A103001 Standard Slab on Grade	Interior of Building At-Grade Slab-on-Grade	e/ 1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	s 4	4 199	90 21-Nov-	-17 MH	28	50	32	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	550	\$10	SF \$5,	500	0% 55	% 5%	\$7,000									
Eagle Heights Sewage & Sewage - Lift Station Treatment Building	820 B Shell	B10 Superstructure	B10 Superstruct	ure B10 Superstructure	Interior of Building/ General Superstructure	al 1	The superstructure is comprised of masons blocks with a wood formed root. Some of forescence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distors was observed or reported. There was no evidence or reports of long- term leakage that wood allude to concelled structural damage.		4 199	90 21-Nov-	-17 MH	28	50	32	Masonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.		e 3 - Future Renewal		Yes	Yes	No	1	\$2,000	EA \$2,	000	0% 10	% 5%	\$3,000									
Eagle Heights Sewage 8 Sewage - Lift Station Treatment Building	820 B Shell	B20 Exterior Enclosure	82010 Exterior	Walls B201001 Exterior Enclosure	Exterior Walls/Wood Elements		Wood cladding and wood trim (included roof framing) is present through sections of the building. Some deterioration was noted in these elements.	3	3 199	90 21-Nov-	-17 MH	28	12	2	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal		Yes	No	No	1	\$500	EA \$S	00	0% 10	% 5%	\$1,000		\$1,000							
Eagle Heights Sewage 8 Sewage - Lift Station Treatment Building	820 B Shell	B20 Enclosure	E2030 Exterior I	Noors B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	4	4 199	90 21-Nov-	-17 MH	28	30	5	Replace door at the end of is service life.	Replacement	3 - Future Renewal		Yes	No	No	1	\$1,500	EA \$1,	500	0% 5	% 5%	\$2,000					\$2,000				
Eagle Heights Sewage 8 Sewage - Lift Station Treatment Building	820 B Shell	D30 Roofing	B3010 Roof Coverings	8301001 High Slope Roof Caverings	Roof Assembly	1	The roof is sloped assembly which has been waterproofed with an SBS membrane. MH did not have roof access during this review. The roof drains via aluminum gutters to rain water leaders.	4	4 199	90 21-Nov-	-17 MH	28	30	5	Replace roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.		3 - Future Renewal		Yes	No	No	600	\$8	SF \$4,	800	0% 5	% 5%	\$6,000					\$6,000				
Eagle Heights Sewage 8 Sewage - Lift Station Treatment Building	C Interiors	DS0 Electrical	D5020 Lighting Branch Wiring	and D502002 Lighting Equipment	Exterior Lighting Equipment	t	An exterior light is present on the building near the entrance.	4	4 199	90 21-Nov-	-17 MH	28	20	5	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$2	00	0% 0	8 5%	\$1,000					\$1,000				\$1,000



July 18, 2018

**Date Prepared** 

## 830 - Maple Hills Sewer

Infrastructure Condition Assessment and Capital Plan 3504 Hidden Oaks Crescent, Cobble Hill, BC

### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$1,981,806	
Number of Users	60	
Replacement Cost Per User	\$33,030	
Annual Replacement Cost (40 Years)	\$43,873	per year
Annual Replacement Cost (80 Years)	\$24,467	per year
10 Year Capital Plan Total	\$100,000	
10 Year Operations and Maintenance Plan Total	\$45,000	

### **PROPERTY DESCRIPTION**

The Maple Hills Sewer System started construction in 1993 and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	1993	CVRD Input
Wastewater Treatment Plant	1993	CVRD Input
Lift Station	1993	CVRD Input

### PROJECT TEAM

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

## CONTACT INFORMATION

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### 830 - Maple Hills Sewer

### Infrastructure Condition Assessment and Capital Plan 3504 Hidden Oaks Crescent, Cobble Hill, BC

Date Prepared

July 18, 2018

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 8, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
	and Kieran Bertsch	
July 4, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD
	and Kieran Bertsch	for review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		3) Include disclaimer on cost estimates
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New



Date Prepared July 18, 2018

### **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

### Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0 - i reary	3						
lucionationat	4						
Important (1 - 2 Year)	5						\$0
(1 - 2 reary	6						
Short Term	7	2	S-LS-COM-6 and S-LS-GEN-7	Capital Renewal	Replace the electrical and communications, and the generator in the lift station.	\$100,000	¢100.000
(2 - 5 Year)	8						\$100,000
	9						
	10						
Medium Term (5 - 10 Year)	11						\$0
(5 - 10 Tear)	12						
						Total	\$100,000

### Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical	2						\$0
(0 - 1 Year)	3						
Inconstant	4						
Important (1 - 2 Year)	5						\$0
(1-2 (Ear)	6						
	7	2	S-LS-PMP-8 and S-LS-PP-9	Operations	Inspect/assess the condition of the lift station, pumps and process piping.	\$10,000	
Short Term	8						
(2 - 5 Year)	9						\$10,000
(2 - 5 Tear)	10						
	11						
	12						
	13	1	ALL	Operations	Inspect/assess the condition of the wastewater treatment plant, RBC unit and process piping. Consider pumping to Twin Cedars (scheduled).	\$30,000	
Medium Term (5 - 10 Year)	14	3	S-FM-PP-10	Operations	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	\$5,000	\$35,000
	15						
	16						
	17						
						Total	\$45,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner:		Regional District (CVRD)			Infrastructure Condition Assessment														
System:		830 Maple Hills Sewer	_																
Civic Address:	3504 Hidden Oal		_																
Geographic Location:	East of Cobble H	ill	4									_							
Customers:	Parcels:	60	-						2212	Total Replacement Value Value per user	\$1,981,806	_							
	Users:	60						Current Year	2018	Value per user	\$33,030								
Asset ID		Location		Asset Code		Asset Inventory							Condition Assessment			Recommendations / Action Items		10 Year Capital Plan	
	Function Cod	e Address	Location DWG Ref Maj	jor Minor Spec ID Asset Code	Photo Description	Make Model Material Quantity Quantity Unit	Year Installed Year Renewed	ed Service Life Expectancy E	st. Remaining Service Li	ife Unit Price	Replacement Value of Asset	Physical Condition	Level of Service Condition Demand Condition	Probablity of Failure	Severity of Failure Cond	ition Description	Type of Work	Budget Estimate	Timing Comment/Question to be resolved
1	830	3504 Hidden Oaks Cres.	Sewage treatment plant Site Visit / Photos S	S STP STP 1 S-STP-STP-1	2 to 9, 18, 19 Sewage treatment plant building, RBC chamber	1 ea	1993	40	15	Refer to Maple Hills Sewer System Building Condition Assessment.								Refer to Maple Hills Sewer System Building Condition Assessment.	
1	830	3504 Hidden Oaks Cres.	Sewage treatment plant Site Visit / Photos S	5 STP FTR 2 S-STP-FTR-2	8, 9 RBC unit	1 ea	1993	40	15	\$350,000	\$350,000	Fair - chain requires periodic replacement, shaft replaced in 2007	Able to meet capacity	2	2 4	Inspect/assess the condition of the wastewater treatment plant, RBC unit and process piping. Consider pumping to Twin Cedars (scheduled).	Operations	\$30,000	5-10 Year
1	830	3504 Hidden Oaks Cres.	Sewage treatment plant Site Visit / Photos S	S STP PP 3 S-STP-PP-3	3, 7 to 9 Process piping c/w valves, pipes, tees	1 LS	1993	30	5	\$150,000	\$150,000	Fair		2	2 4	Inspect/assess the condition of the process piping	Operations	Included above	5-10 Year
1	830	3504 Hidden Oaks Cres.	Sewage treatment plant Site Visit / Photos S	S STP FTR 4 S-STP-FTR-4	3, 6 Purafil odour control filter system	1 ea	2015	20	17	\$30,000	\$30,000	Good	Meets standard	1	1 5				10+ Year
2	830	3504 Hidden Oaks Cres.	Lift station to disposal field Site Visit / Photos S	5 LS BLD 5 S-LS-BLD-5	5, 10 to 17 Lift station building	1 ea	1993	40	15	Refer to Maple Hills Sewer System Building Condition Assessment.								Refer to Maple Hills Sewer System Building Condition Assessment.	
2	830	3504 Hidden Oaks Cres.	Lift station to disposal field Site Visit / Photos S	5 LS COM 6 S-LS-COM-6	13, 14 Communications/Electrical (LS)	1 LS	1993	10	0	\$15,000	\$15,000	Poor	Does not meet standard	3	2 3	Replace the electrical and communications, and the generator in the lift station.	Capital Renewal	\$100,000	2-5 Year
2	830	3504 Hidden Oaks Cres.	Lift station to disposal field Site Visit / Photos S	LS GEN 7 S-LS-GEN-7	12 Generator (LS)	1 ea	1993	40	15	\$60,000	\$60,000	Poor - old	Does not meet standard	3	2 3	Replace the generator in the lift station	Capital Renewal	Included above	2-5 Year
2	830	3504 Hidden Oaks Cres.	Lift station to disposal field Site Visit / Photos S	LS PMP 8 S-LS-PMP-8	13 Pumps (LS)	2 ea	1993	20	0	\$5,000	\$10,000			3	2 3	Inspect/assess the condition of the lift station, pumps and process piping.	Operations	\$10,000	2-5 Year
2	830	3504 Hidden Oaks Cres.	Lift station to disposal field Site Visit / Photos S	5 LS PP 9 S-LS-PP-9	12 Process piping c/w valves, pipes, tees	1 LS	1993	30	5	\$60,000	\$60,000			3	2 3	Inspect/assess the condition of the process piping	Operations	Included above	2-5 Year
3	830	3504 Hidden Oaks Cres.	HIDDEN OAKS CRESCENT GIS	5 FM PP 10 S-FM-PP-10	Forcemain, unknown diameter, assumed 150mm	542 m	1993	40	15	\$500	\$270,915			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	\$5,000	5-10 Year
3	830	3504 Hidden Oaks Cres.	HIDDEN OAKS CRESCENT GIS S	5 SS S 11 S-SS-S-11	Sewermain, unknown diameter, assumed 200mm	604 m	1993	40	15	\$550	\$332,174			1	2 5			/	10+ Year
4	830	3504 Hidden Oaks Cres.	PECHANGA CLOSE     GIS     S	5 SS S 12 S-SS-S-12	Sewermain, unknown diameter, assumed 200mm	119 m	1993	40	15	\$550	\$65,695			1	2 5				10+ Year
5	830	3504 Hidden Oaks Cres.		S S S 13 S-SS-S-13	Sewermain, unknown diameter, assumed 200mm	316 m	1993	40	15	\$550	\$174,022			1	2 5				10+ Year
										40.000									
6	830	3504 Hidden Oaks Cres.	Entire system GIS S	S SS SV 14 S-SS-SV-14	Sewer Service Connections	61 ea	1993	80	55	\$3,000	\$183,000			1	2 5			/	10+ Year
6	830	3504 Hidden Oaks Cres.	Entire system GIS S	SS MH 15 S-SS-MH-15	Sewer manholes		1993 1993	40	15	\$8,000	\$96,000		<u> </u>	1	2 5			/	10+ Year
6	830	3504 Hidden Oaks Cres. 3504 Hidden Oaks Cres.	Entire system GIS S	SS         MH         15         S-SS-MH-15           SS         CO         16         S-SS-CO-16           STP         DF         17         S-STP-DF-17	Sewer Cleanouts Disposal field	5 ea	1993	40	15	\$3,000	\$15,000				2 5			+	
6	020		Entire system GIS S	STP         DF         17         S-STP-DF-17           S         STP         DF         18         S-STP-DF-18	Disposal field building		1993	40	15	\$150,000	\$150,000			1	2 5				
0	630	3504 Hidden Oaks Cres.	Entire system GIS S	S STP DF 18 S-STP-DF-18		I ea		40	12	\$20,000	<b>ΫΖΟ,ΟΟΟ</b>			L	2 5			·	
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	1						I	I I I I						I			•	_ <b>_</b>	I

frastructure	Condition	Assessment

SEWAGE TREATMENT PLANT FIELD INSPECTION	<b>P</b> . M	DRRISON HERSHFIELD
SYSTEM: Maple H.11 Sever	DATE:	Nov. 23/17
SYSTEM 830	PROJECT No.:	5170700
BY:	CVRD STAFF PRESENT:	
1) Type of Treatment System (Schematic)		
2) Site Conditions/Security		
3) Condition of Structure;		

830 (1)





830 (3)



**830 (4)** 2 of 10



830 (5)



**830 (6)** 3 of 10



830 (7)



**830 (8)** 4 of 10



830 (9)



**830 (10)** 5 of 10



830 (11)



**<sup>830 (12)</sup>** 6 of 10



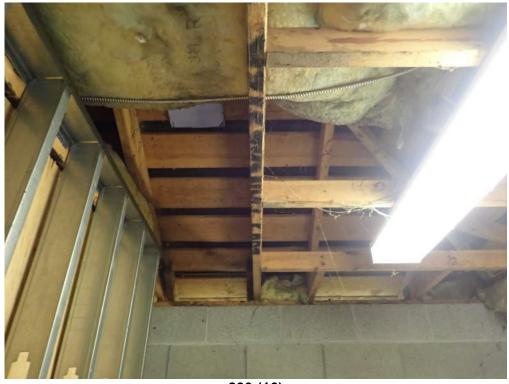
830 (13)



**830 (14)** 7 of 10



830 (15)



**830 (16)** 8 of 10



830 (17)



**830 (18)** 9 of 10

830 Maple Hill Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

830 (19)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Maple Hill -Lift Station - Functional Code 830

			•			CO1	PONENT			_					1	LIFECYCLE DAT	-	RECOMMENDATION			If recommended						OPINION OF I		OST		
e		ę	lineus	₽	dual	CON			CONDITION ASSESSMEN	ſ			g				A	RECOMMENDATION			work not	Will a failure in	Can the current				OPINION OF I	ROBABLE	2031		
BLDG Nam	BLDG Typ	Function Co	Level 1 Major - Elements	Level 2 Gro Elements	Level 3 Indivi Elements		Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Dat	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation 😤	Priority	Can this work be phased over multiple years ?	complete can the rate of deterioration be expected to increase ?	this system lead to a loss of use of the facility ?	condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Maple Hill -Lift Station	Sewage Treatment Building	830	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the building was not confirmed and has been assumed.	4	4	2000	21-Nov-17	′ мн	18	50	32	The foundations are expected to remain Not Applic serviceable for the life of the building. No capital expenses associated with this item are expected.	able Not Applicable	Yes	Yes	Yes	No	110	\$30	SF	\$3,300	0%	5%	5%	\$4,000
Maple Hill -Lift Station	Sewage Treatment Building	830	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	2000	21-Nov-17	MH	18	50	32	The concrete slab-on-grade is expected to Not Applic remain serviceable for the life of the building, with located repairs, if needed. No capital expenses associated with this item are expected.	able Not Applicable	Yes	Yes	Yes	No	110	\$30	SF	\$3,300	0%	5%	5%	\$4,000
Maple Hill -Lift Station	Sewage Treatment Building	830	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of masony block. Some efforescence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	2000	21-Nov-17	MH	18	50	32	Masony structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	vance 3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA	\$2,000	0%	10%	5%	\$3,000
Maple Hill -Lift Station	Sewage Treatment Building	830	B Shell	B20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/Wood Elements	1	Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.	3	3	2000	21-Nov-17	′ МН	18	12	2	Repaint wood cladding, install flashing Replacen over exposed wood roof framing.	ent 3 - Future Renewal	Yes	Yes	No	No	1	\$500	EA	\$500	0%	10%	5%	\$1,000
Maple Hill -Lift Station	Sewage Treatment Building	830	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	4	4	2000	21-Nov-17	′ МН	18	30	12	Replace door at the end of its service life. Replacem	ent 3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA	\$1,500	0%	5%	5%	\$2,000
Maple Hill -Lift Station	Sewage Treatment Building	830	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	1	The roof is sloped assembly which has been waterproofed cedar shakes.	4	4	2000	21-Nov-17	MH	18	23	5	Replace metal roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	ent 3 - Future Renewal	No	Yes	No	No	120	\$30	SF	\$3,600	0%	5%	5%	\$4,000
Maple Hill -Lift Station	Sewage Treatment Building	830	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	4	4	2000	21-Nov-17	MH	18	20	10	Replace lights at the end of their service Replacen life.	ent 3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000



Cowichan Valley Regional District

Photo 1

Cowichan Valley Regional District
Facility Condition Assessment and Capital Plan
Maple Hill -Lift Station - Functional Code 830

	COMPONENT CONDITION AS							CONDITION ASSESSME	NT					LIFECYCLE DAT	TA	RECOMMEN	DATION			If recommended	1				OPINION	OF PROBABI	LE COST			10-YEAR CAPI	TAL PLAN							
BLDG Name	BLDG Type	Function Code	el 1 Major Gro Elements	12 Group Elem	:vel 3 Individui Elements	ID	tion / Type	Photo	Description & History	andition	rformance dew or Last	sment Date	sessed By	je in 2018	Typical e Cycle or ion Interval	Est. Time naining to EOL Major Action	Recommendation	Type	Priority	phased over	work not complete can the rate of deterioration be expected to	this system lead		antity	Init Rate Unit	subtotal tepair or cement Cost	Consult.	tin-gency	5% Tax	tal in 2017 Dollars		019 2020		2022	2023	2024 2025	2026	2027
Maple Hill -Li Station	: Sewage Treatment Building	830	ع A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/Foundations	s 1	The foundation is comprised of cash-in-place concrete flootings with concrete foundation walk. The foundation is concealed for review, with the exception of some above-grade foundation wal on some elevation. The age of the building was not confirmed and has been assumed.	1	4 2000	21-Nov-17	MH	18	50	Ren or	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	110	\$30 58	\$3,300	0%	Š 5%	5%	\$4,000	\$0 \$1	,000 \$0	\$0	\$4,000	\$0	\$0 \$0	50	\$1,000
Maple Hill -Li Station	: Sewage Treatment Building	830	A Substructure	A10 Foundations	A1030 Slab on Grade	e A103001 Standard Sla on Grade	ab Interior of Building At-Grade Slab-on-Grade	le/ 1	The floor is concrete slab-on-grade. Isolated hairline cracking wa observed. No evidence of major settlement or heaving was reported or observed.	s 4	4 2000	21-Nov-17	MH	18	50	32	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	110	\$30 SF	\$3,300	0%	5%	5%	\$4,000								
Maple Hill -Li Station	: Sewage Treatment Building	830	8 Shell	810 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/Genera Superstructure	al 1	The appendixtucture is comprised of mosony blocks. Some efflorescence was noted on the interfair, however, MH understands that no active leaks are prevailed. No vettement or other evidence of structural distress was observed or reported. There was no evidence or reports of long term leakage that would allude to concelled structural damage.	4	4 2000	21-Nov-17	MH	18	50	32	Maxonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	Repair Allowance	e 3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000 EA	\$2,000	0%	10%	5%	\$3,000								
Maple Hill -Li Station	: Sewage Treatment Building	830	B Shell	B20 Exterior Enclosure	B2010 Exterior Wall	s B201001 Exterior Enclosure	Exterior Walls/Wood Elements	1	Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.	3	3 2000	21-Nov-17	MH	18	12	2	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500 E/	\$500	0%	10%	5%	\$1,000	\$1	,000						
Maple Hill -Li Station	: Sewage Treatment Building	830	B Shell	B20 Enclosure	E2030 Exterior Door	s B203001 Solid Doors	Exterior Walls/ Door	1	One painted metal door is present on the building.	4	4 2000	21-Nov-17	MH	18	30	12	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 E/	\$1,500	0%	5%	5%	\$2,000								
Maple Hill -Li Station	Treatment Building	830	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	1	The roof is sloped assembly which has been waterproofed cedar shakes.						23	5	Replace metal roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	Replacement	Renewal	No	Yes	No	No			\$3,600				\$4,000				\$4,000				
Maple Hill -Li Station	: Sewage Treatment Building	830	C Interiors	D50 Electrical		D502002 Lighting Equipment	Exterior Lighting Equipment	ıt	An exterior light is present on the building near the entrance.	4	4 2000	21-Nov-17	MH	18	20	10	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 15	\$200	0%	0%	5%	\$1,000								\$1,000

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Maple Hill -Sewage Treatment Building - Functional Code 830

		ę		_	CON	/IPONENT	CONDITION ASSESSMENT							LIFECYCLE DAT	ΓA	RECOMMENDATION			If recommended					OPINIC	N OF PROBA	BLE COST		
BLDG Name BLDG Type	Function Code	Level 1 Major Grou Elements	Level 2 Group Elements	Level 3 Individua Elements	ID	Location / Type	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation E	Priority	Can this work be phased over multiple years ?	work not complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?	condition	Quantity	Unit Rate	Subtotal Repair or Replacement	Cost Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Maple Hill -Sewage Sewage Treatment Building Building		A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations 1	The foundation is comprised of cast-in-place concrete footings with concrete and concrete block foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the building was not confirmed and has been assumed.	4	4	1990	21-Nov-17	MH	28	50	22	The foundations are expected to remain Not Applicable serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Yes	Yes	Yes	No	150	\$20 S	\$3,000	0%	5%	5%	\$4,000
Maple Hill -Sewage Sewage Treatment Building Treatment Building		A Substructure	A10 Foundations	A1030 Slab on Gra	ade A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	1990	21-Nov-17	МН	28	50	22	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with solated repair; in needed. No capital expenses associated with this item are expected.	Not Applicable	Yes	Yes	Yes	No	150	\$10 S	\$1,500	0%	5%	5%	\$2,000
Maple Hill-Sewage Sewage Treatment Building Treatment Building		B Shell	B10 Superstructure	B10 Superstructur	e B10 Superstructure	Interior of Building/ General 1 Superstructure	The superstructure is comprised of masony blocks. Some efforescence was noted on the interior; however, MH understands that active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	1990	21-Nov-17	МН	28	50	22	Maxonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	e 3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000 E	\$2,000	0%	10%	5%	\$3,000
Maple Hill -Sewage Treatment Building Building		B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door 1	A wood door is present at the main entrance. The door was noted to be in poor condition.	3	3	1990	21-Nov-17	МН	28	30	2	Replace door at the end of its service life. Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$500 E	\$500	0%	5%	5%	\$1,000
Maple Hill -Sewage Sewage Treatment Building Treatment Building		B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door 1	One painted overhead door is present on the building.	4	4	1990	21-Nov-17	МН	28	30	5	Replace door at the end of its service life. Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$1,500 E	\$3,000	0%	5%	5%	\$4,000
Maple Hill - Sewage Sewage Treatment Building Building		B Shell	D30 Roofing	B3010 Roof Coverings	B301002 Low slope Roof Coverings	Roof 1 - 2	The roof consists of a cast-in-place concrete slab. Ongoing water ingress is noted through the roof.	2	2	1990	21-Nov-17	МН	28	25	1	Install a new 2-pty SBS membrane over the roof, install as slope to drain. Water should be collected and drained, to avid excess water running down the above/below grade walls. Ongoing maintenance of the roof should include review of all penetrations when required.	3 - Future Renewal	No	Yes	No	No	150	\$30 S	\$4,50	0%	5%	5%	\$5,000

### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan

racinty condition Assessment and capital rian
Maple Hill -Sewage Treatment Building - Functional Code 830

			ŝ	ants	_		COMPONENT		CONDITION ASSESSMENT						LIFECYCLE DA	TA	RECOMMENDA	TION			If recommended	I.				OPINION O	F PROBABLE	COST			10-YEAR CAPITAL	LAN					
BLDG Name	B LD G Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elems	Level 3 Individua Elements	ID	Location / Type	Phot	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?		this system lead	adversely affect	Quantity	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars	2018 2019 \$5,000 \$1,000	2020 \$0	2021 \$0	2022 \$4,000	2023 \$0	2024 2 \$0	025 2026 2027 \$0 \$0 \$0
Maple Hill-Sewage Treatment Building		830 A Sut	bstructure .	A10 Foundations	A1010 Standa Foundations	d A101001 Wall Foundations	Underground/ Fou	ndations 1	The foundation is compreted of cash-in-place concrete footings with concrete and concrete fook (considion walk). The foundation is concealed from review, with the exception of some above grade foundation wild no same elevations. The age of the building was not confirmed and has been assumed.	4	4	1990 21-1	Nov-17 MH	28	50	22	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	150	520 SF	\$3,000	0%	5%	5%	\$4,000							
Maple Hill -Sewage Treatment Building		830 A Sub	bstructure .	A10 Foundations	A1030 Slab or	Grade A103001 Standard on Grade	d Slab Interior of Building Slab-on-Grade	At-Grade/ 1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	1990 21-	Nov-17 MH	28	50	22	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	150	\$10 SF	\$1,500	0%	5%	5%	\$2,000							
Maple Hill -Sewage Treatment Building	Treatment Building	830 B She		B10 Superstructure	B10 Superstru	ture B10 Superstructu	re Interior of Building Superstructure	/ General 1	The supertructure is compresed of maxomy blocks. Some efforescence was noted on the interior; however, MH understands but active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	1990 21-1	Nov-17 MH	28	50	22	Masony structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	epair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1 \$:	8,000 EA	\$2,000	0%	10%	5%	\$3,000							
Maple Hill -Sewage Treatment Building		B30 B She	ell	B20 Enclosure	E2030 Exterio	Doors B203001 Solid Do	ors Exterior Walls/ Doc	er 1	A wood door is present at the main entrance. The door was noted to be in poor condition.	3	3	1990 21-	Nov-17 MH	28	30	2	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1 5	500 EA	\$500	0%	5%	5%	\$1,000	\$1,000						
Maple Hill -Sewage Treatment Building	Sewage 8 Treatment Building	830 B She	ell	B20 Enclosure	E2030 Exterio	Doors B203001 Solid Do	ors Exterior Walls/ Doc	r 1	One painted overhead door is present on the building.	4	4	1990 21-	Nov-17 MH	28	30	5	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No			\$3,000	0%	5%	5%	\$4,000				\$4,000			
Maple Hill -Sewage Treatment Building	Sewage 8 Treatment Building	830 B Shé	ell	D30 Roofing	B3010 Roof Coverings	B301002 Low slop Coverings	e Roof Roof	1-5	The roof consists of a cast-in-place concrete slab. Ongoing water ingress is noted through the roof.	2	2	1990 21-	Nov-17 MH	28	25	1	Install an new 2-phy SE to be to drain. Water the root install as some that would be collected and drained, to avoid excess water running down the above/below grade walls. Orgoing maintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	No	Yes	No	Να	150	\$30 SF	\$4,500	0%	5%	5%	\$5,000	\$5,000						

Cowichan Valley Regional District

Maple Hill -Sewage Treatment Building - Functional Code 830

Photo 1



Photo 2



Infrastructure Condition Assessment and Capital Plan 3065 Gregory Road, Shawnigan Lake, BC

PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$15,137,098	
Number of Users	377	
Replacement Cost Per User	\$40,151	
Annual Replacement Cost (40 Years)	\$176,366	per year
Annual Replacement Cost (80 Years)	\$186,878	per year
10 Year Capital Plan Total	\$263,000	
10 Year Operations and Maintenance Plan Total	\$310,000	

#### **PROPERTY DESCRIPTION**

The Shawnigan Beach Sewer System started construction in 1978 and includes the phases outlined in the table below.

Development	Year Installed	Source
Lagoon System (includes Upper Disposal Field)	1978	Innova Report
Robertson Development	1980	Innova Report
Terrace Development	1980	Innova Report
Wildflower	1994	Record Drawings (10808)
Meadowview	1994	Innova Report
Gregory rd. Development	2000	Innova Report
MacFarlane Cres. Development	2006	Innova Report
Ingot Rd Development	2006	Record Drawings (1501-01-16)
Wastewater Treatment Plant Upgrades and Lower Disposal Field	2015	Innova Report

#### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

#### CONTACT INFORMATION

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Date Prepared July 18, 2018



Infrastructure Condition Assessment and Capital Plan 3065 Gregory Road, Shawnigan Lake, BC

Date Prepared

July 18, 2018

#### **REPORT NOTES**

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 8, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
	and Kieran Bertsch	
July 4, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD for
	and Kieran Bertsch	review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		3) Include disclaimer on cost estimates
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New



Infrastructure Condition Assessment and Capital Plan 3065 Gregory Road, Shawnigan Lake, BC

Date Prepared July 18, 2018

### **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

### Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
	3						
Important (1 - 2 Year)	4 12 ALL		Capital Upgrade/New	Inspect/assess Robertson lift station for deterioration to determine replacement timing/phasing. Install backup power and a second pump. Upgrade electrical and communications systems.	\$40,000	\$40,000	
. ,	5						
	6						
	7	5	S-STP-COM-14	Capital Upgrade/New	Upgrade lagoon electrical and communication systems.	\$9,000	
	8	6	S-STP-DF-23	Capital Renewal	Increase disposal field capacity depending on outcome of lagoon assessment.	\$100,000	
Short Term	9 9 ALL		Capital Upgrade/New	Inspect/assess Meadowview lift station for deterioration to determine replacement timing/phasing. Upgrade electrical and communications systems, and install backup power.	\$35,000	4044.000	
(2 - 5 Year)	10	13	ALL	Capital Upgrade/New	Inspect/assess Terrace lift station for deterioration to determine replacement timing/phasing. Install backup power and upgrade electrical and communications systems.	\$35,000	\$214,000
	11 14 ALL		Capital Upgrade/New	Inspect/assess Wildflower lift station for deterioration to determine replacement timing/phasing. Install backup power and upgrade electrical and communications systems.	\$35,000		
	12						
Medium Term	13	6	S-STP-COM-22	Capital Upgrade/New	Upgrade electrical and communication systems for the lower disposal field lift station.	\$9,000	4
(5 - 10 Year)	14						\$9,000
	15						
						Total	\$263,000

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Infrastructure Condition Assessment and Capital Plan 3065 Gregory Road, Shawnigan Lake, BC

Date Prepared July 18, 2018

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total	
Critical (0 - 1 Year)	1	2	S-STP-SL-2	Operations	Further assessment of the storage lagoon is required to identify options to manage/storage wastewater flows. This should include at a minimum a detailed review of sources of I&I and options to reduce/manage peak flows.	\$40,000	\$40,000	
()	2							
	3							
Important	4							
(1 - 2 Year)	5						\$0	
	6							
	7	1	S-STP-FL-1	Operations	Review facultative lagoon performance and identify upgrade requirements (ex. sludge curtain).	\$10,000		
	8	8 7 ALL		Maintenance	Rehabilitate field by clearing brush, installing fence, and any other required work.	\$100,000		
Short Term (2 - 5 Year)	9	10	ALL	Operations	Inspect/assess Gregory Rd lift station for deterioration to determine replacement timing/phasing.	\$10,000	\$130,000	
(2 - 5 Year) -	10 11 ALL		Operations	Inspect/assess MacFarlane Cres lift station for deterioration to determine replacement timing/phasing.	\$10,000			
	11							
	12							
	S-STP-STP-3 and		Maintenance	Dispose of dried sludge, remove invasive brush and prepare site for future desludging activities.	\$50,000			
			Operations	Inspect/assess wastewater treatment plant and lift station for deterioration to determine replacement timing/phasing.	\$10,000			
<del></del>	15	8	S-LS-BLD-28	Operations	Inspect/assess Ingot Rd lift station for deterioration to determine replacement timing/phasing.	\$10,000		
Medium Term - (5 - 10 Year)	16	15, 16, 17, 21, 29, 36, 39 and 41	As Noted	Operations	Inspect/assess forcemains for deterioration to determine replacement timing/phasing.	\$20,000	\$140,000	
	17	16 to 43	As Noted	Operations	Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.	\$50,000		
	18							
						Total	\$310,000	

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

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Owner: Cowichan Valley Region System: 840	nal District (CVRD) Shawnigan Beach Sew	wer			Infrastructure Condition Assessment										
Civic Address: 3065 Gregory rd Geographic Location: North of Shawnigan Lak Customers: Parcels: Users:	ke 371 377						Current Year	2018	Total Replacement Value\$15,137,093Value per user\$40,151						
Asset ID Function Code	Location Address	Location	DWG Ref Major Minor	Asset Code r Spec ID Asset Code	Photo Description	Asset Inventory Make Model Material Quantity Quantity Unit Year Installed Ye	'ear Renewed Service Life Expectancy	Est. Remaining Service Life	Unit Price Replacement Value	f Asset Physical Condition	Level of Service Condition	Condition Assessment Demand Condition	Probablity of Failure Severity of Failure	Recommendations / Action Items     10 Year Capital       Condition     Type of Work     Budget Esting	Plan mate Timing Comment/Question to be resolved
1 840	3065 Gregory rd	Facultative Lagoon		FL 1 S-STP-FL-1	21 to 26 Facultative Lagoon	1 LS 1978	80	40	\$1,000,000 \$1,000,000	Fair - some vegetation required	Meets standard	May be at capacity. Recently desludge and the addition of a sludge curtain will reduce short circuiting and improve future desludging operations		Review facultative lagoon performance and identify Upgrade requirements (ex. sludge curtain).	
2 840	3065 Gregory rd	Storage Lagoon	Site Visit / Photos S STP	SL 2 S-STP-SL-2	16 to 20, 29 to 42 Storage lagoon	1 LS 1978	80	40	\$1,500,000 \$1,500,000	Poor, old	Does not meet standard	At capacity, water level within 2 feet of top of berm	5 5	Image: Point of the storage lagoon is required to identify options to manage/storage wastewater flows. This should include at a minimum a detailed review of sources of I&I and options to reduce/manage peak flows.Operations\$40,000	0 0-1 Year CVRD thoughts on approach? Budget amount?
3 840	3065 Gregory rd	Sludge Drying beds	Site Visit / Photos S STP	SLG 13 S-STP-SLG-13	8 to 13 Sludge drying beds	1 LS 1978	80	40	\$300,000 \$300,000	Fair, brush growing in and around drying be	ds Meets standard	Able to manage sludge, desludged ~2 years ago (desludge every 5-7 years)	2 2 2	4     Dispose of dried sludge, remove invasive brush and prepare site for future desludging activities.     Maintenance     \$50,000	5-10 Year     Sludge disposal cost?
4 840	3065 Gregory rd 3065 Gregory rd	Sewage treatment plant	Site Visit / Photos     S     STP       Site Visit / Photos     S     STP	PP 4 S-STP-PP-4	43 to 58 Sewage treatment plant 43 to 58 Process piping (STP)	1 LS 2015	40	37	Refer to Shawnigan Beach Sewer System Building Conc \$50,000 \$50,000	on Assessment. Good	Meets standard	Able to manage flows	1 3	A       Inspect/assess wastewater treatment plant and lift       Refer to Shawn         4       station for deterioration to determine replacement       Operations       \$10,000	igan Beach Sewer System Building Condition Assessment.
4 840	3065 Gregory rd	Sewage treatment plant		FTR 5 S-STP-FTR-5	48, 49, 54 Belt screen filter (STP)	Salsnes 1 ea	20	17	\$100,000 \$100,000	Good	Meets standard	Meets needs. There is limited material removed during filtration process and therefore the filters do	1 2	timing/phasing.	10+ Year
4 840 4 840	3065 Gregory rd 3065 Gregory rd	Sewage treatment plant Sewage treatment plant Sewage treatment plant		UV         6         S-STP-UV-6           LS         8         S-STP-LS-8	47, 48, 50, 52     UV treatment filter (STP)       58     Lift station to pump treatment effluent to disposal field lift stations	Trojan         UV3000         2         ea         2015           1         LS         1078	20 40	17 0	\$15,000 \$30,000 \$200,000 \$200,000	Good Good	Meets standard Meets standard	not experience any capacity issues. Able to manage flows Able to manage flows	1         2         1           1         3         3	5     Inspect/assess lift station for deterioration to determine     Operations     Included a	10+ Year       Solve       5-10 Year
4         840           4         840	3065 Gregory rd 3065 Gregory rd	Sewage treatment plant	Site Visit / Photos S STP	PMP     9     S-STP-PMP-9       COM     11     S-STP-COM-11	58       Pumps (Treated Effluent Lift Station to Disposal Field Lift Stations)         47, 51, 53       Communications (STP)	Image: Constraint of the second sec	20 10	0 7	\$5,000 \$10,000 \$20,000 \$20,000	Good Good, intrusion alarm	Meets standard Meets standard	Able to manage flows Able to control flows	1         2         1           1         2         1	replacement timing/phasing.     opportunity       5	10+ Year       10+ Year
5         840           5         840	3065 Gregory rd 3065 Gregory rd	Next to lagoon Next to lagoon	Site Visit / Photos     S     STP       Site Visit / Photos     S     STP	STP         12         S-STP-STP-12           COM         14         S-STP-COM-14	14, 15, 80 to 86     Office building       85     Communications (Lagoon operations in old office building)	1         LS         1978           1         LS         1978	40 10	0	Refer to Shawnigan Beach Sewer System Building Cond         \$9,000       \$9,000	on Assessment. Poor, old	Does not meet standard	Does not have sufficient capacity to efficiently run lagoon operations	3 2	Amount       Refer to Shawn         3       Upgrade lagoon electrical and communication systems.       Capital Upgrade/New       \$9,000	igan Beach Sewer System Building Condition Assessment.
6 840	3065 Gregory rd	Lower Disposal field	Site Visit / Photos S STP	LS 15 S-STP-LS-15	67, 68 Lower Disposal Field Lift Station		40	37	\$250,000 \$250,000	Good	Meets standard	Able to manage flows (although insufficient capacity in disposal field). There is also no backup generator, however, one can argue no backup backup is required provided there is sufficient storage at the lagoon.	1 2	5         Image: Sector Se	10+ Year
6 840	3065 Gregory rd	Lower Disposal field		PMP 16 S-STP-PMP-16	67, 68 Pumps in lower disposal field lift station	6     ea     2015	20	17	\$5,000 \$30,000	Good	Meets standard	Able to manage flows (although insufficient capacity in disposal field) Controls sufficient to cycle flows through 6 pumps to 6		5 Upgrade electrical and communication systems for the Constal Upgrade (New Constal Upgrade co	10+ Year
6 840 6 840	3065 Gregory rd 3065 Gregory rd	Lower Disposal field Lower Disposal field		COM         22         S-STP-COM-22           DF         23         S-STP-DF-23	69, 70       Communication kiosk (lower disposal field lift station)         60 to 66       Lower disposal field	1     ea     2015       1     ea     2015	10 40	7 37	\$9,000 \$9,000 \$150,000 \$150,000	Fair, alarms for failing pumps, no intrusion Fair	Ilarm on cabir Does not meet standard Does not meet standard	separated areas Insufficient capacity	2 2 2 3 2 4	4     Capital Opgrade/New     \$9,000       3     Increase disposal field capacity depending on outcome of lagoon assessment.     Capital Renewal     \$100,00	
7         840           7         840	3065 Gregory rd 3065 Gregory rd	Upper drainage field Upper drainage field		DF         24         S-STP-DF-24           LS         25         S-STP-LS-25	2 to 6     Upper drainage field       7     Lift Station for Upper Disposal Field	1         ea         1978           1         ea         1978	40 40	0	\$150,000 \$150,000 \$250,000 \$250,000	Poor, invasive broom brush overgrowing fields	ld Does not meet standard Meets standard	Using abandoned field since current disposal field is at capacity Able to manage flows	3     2       3     2	3Rehabilitate field by clearing brush, installing fence, and any other required work.Maintenance\$100,003Rehabilitate field by clearing brush, installing fence, and any other required workMaintenanceIncluded a	
7     840       7     840	3065 Gregory rd 3065 Gregory rd	Upper drainage field Upper drainage field	Site Visit / Photos     S     STP       Site Visit / Photos     S     STP	PMP         26         S-STP-PMP-26           COM         27         S-STP-COM-27	7     Pumps in Upper Disposal Field Lift Station       7     Communications (Upper Disposal Fields)	1 ea 1978	20	0	\$5,000 \$5,000 \$9,000 \$9,000	Good	Meets standard Meets standard	Able to manage flows Able to manage flows (only used to pump flows to	3 2 3 2	3Rehabilitate field by clearing brush, installing fence, and any other required workMaintenanceIncluded a3Rehabilitate field by clearing brush, installing fence, and Rehabilitate field by clearing brush, installing fence, andMaintenanceIncluded a	
8 840	3065 Gregory rd	2178 Ingot Road		BLD         28         S-LS-BLD-28	7     Communications (Opper Disposal Fields)       73 to 79     Lift station (Ingot rd) c/w site fencing, access gate	1 ea 1978 1 ea 2013	40	35	\$9,000 \$9,000 \$9,000	Good, no odour issues	Meets standard Meets standard	upper disposal field) Able to manage flows	1 3	any other required work     Included d       4     Inspect/assess Ingot Rd lift station for deterioration to     Operations     \$10.000	
8         840           8         840           8         840           8         840	3065 Gregory rd 3065 Gregory rd 3065 Gregory rd	2178 Ingot Road 2178 Ingot Road 2178 Ingot Road 2178 Ingot Road 2178 Ingot Road		PMP         29         S-LS-PMP-29           GEN         31         S-LS-GEN-31	73, 78Pumps (Ingot rd lift station)73, 74, 77Generator (Ingot rd LS)73, 75, 76, 78, 79Communication kiosk (Ingot rd LS)	Image: SDMO     J60     Image: SDMO     J60     Image: SDMO	20 40 10	15 35 5	\$5,000 \$10,000 \$80,000 \$80,000 \$9,000 \$9,000	Good Good Good, intrusion alarm	Meets standard Meets standard Meets standard	Able to manage flows Backup power sufficient Controls sufficient	1     2     1       1     2     1       1     2     1	determine replacement timing/phasing.     opportunity       5	10+ Year         10+ Year         10+ Year
9 840	3065 Gregory rd		Site Visit / Photos S LS		87 to 93 Lift station (Meadowview LS) c/w site fencing, access gate	1 ea	40	16	\$250,000 \$250,000	Good, fenced and gated, concrete in good s	nape, (unsure Does not meet standard, no backup power	Able to manage flows, although lots of I&I due to swampy area	3 3	Inspect/assess Meadowview lift station for deterioration to determine replacement timing/phasing. Upgrade electrical and communications systems, and install	2-5 Year Scope of I&I issues needs to be identified
9 840	3065 Gregory rd	near 2821 Meadowview Road near 2821 Meadowview Road	ad Site Visit / Photos S LS	PMP 34 S-LS-PMP-34	89     Pumps (Meadowview LS)	Image: Market in the second	20	0	\$5,000 \$10,000	Good, original pumps in wet well but new r		Able to manage flows	3 2 2	backup power. Inspect/assess pumps for deterioration to determine replacement timing/phasing.	
9 840 10 840	3065 Gregory rd 3065 Gregory rd	near 2821 Meadowview Road	ad Site Visit / Photos S LS	COM 36 S-LS-COM-36	88, 90, 91 to 93       Communication kiosk (Meadowview LS)         98 to 112       Lift station (Gregory rd LS) c/w site fencing, access gate	1         ea         1994           1         ea         1994           1         ea         2000	10 40	0 22	\$9,000 \$9,000 Refer to Shawnigan Beach Sewer System Building Conc	Poor, old electrical and controls, com-tel for on Assessment.	alarm Does not meet standard	Requires new technology	3 2 4 		bove 2-5 Year igan Beach Sewer System Building Condition Assessment.
10 840 10 840	3065 Gregory rd 3065 Gregory rd	near 2882 Gregory Road	Site Visit / Photos	WW         38         S-LS-WW-38           PMP         39         S-LS-PMP-39	98 to 112     Lift station wet well (Gregory rd LS)       101, 108 to 111     Pumps (Gregor rd LS)	1 ea 2000	40	22	\$250,000 \$250,000 \$5,000 \$10,000	Good, fenced and gated, piping needs to be Good, 2 new pumps with VFDs	replaced in 5- Meets standard Meets standard	Able to manage flows Able to manage flows	2 3 3	3Inspect/assess Gregory Rd lift station for deterioration to determine replacement timing/phasing.Operations\$10,0003Inspect/assess lift station for deterioration to determine replacement timing (shaping)OperationsIncluded a	
10 840	3065 Gregory rd	near 2882 Gregory Road near 2882 Gregory Road		GEN 41 S-LS-GEN-41	101, 105 to 111     Fumps (Gregori to LS)       102, 103     Generator (Gregory rd LS)	SDMO         1         ea         2000	40	2	\$80,000 \$80,000	Good	Meets standard Meets standard	Sufficient backup power	2 2	4       Inspect/assess lift station for deterioration to determine replacement timing/phasing.       Operations       Included a	
10 840	3065 Gregory rd	near 2882 Gregory Road	Site Visit / Photos S LS	COM 42 S-LS-COM-42	98 to 100, 104 to 107 Communication kiosk (Gregory rd LS)	1 ea 2000	10	0	\$9,000 \$9,000	Good, recent upgrades	Meets standard	Able to control flows	3 2 2	3       Inspect/assess lift station for deterioration to determine replacement timing/phasing.       Operations       Included a         3       Inspect/assess MacFarlane Cres lift station for       0       0       0	pove 2-5 Year
11 840 11 840	3065 Gregory rd 3065 Gregory rd	2290 MacFarlane Cres.		BLD 43 S-LS-BLD-43 PMP 44 S-LS-PMP-44	113 to 118       Lift station (MacFarlane cres LS) c/w site fencing, access gate         118       Pumps (MacFarlane cres LS)	1 ea 2000 2000	40	22	\$250,000 \$250,000 \$5,000 \$10,000	Good, fenced and gated	Meets standard Meets standard	Able to manage flows Able to manage flows	2 3 3 2	3       Operations       \$10,000         3       Inspect/assess lift station for deterioration to determine       Operations       \$10,000	
11 840 11 840	3065 Gregory rd 3065 Gregory rd	2290 MacFarlane Cres. 2290 MacFarlane Cres.	Site Visit / Photos S LS	GEN         46         S-LS-GEN-46           COM         47         S-LS-COM-47	115 to 117     Generator (MacFarlane cres LS)       115 to 117     Communication kiosk (MacFarlane cres LS)	SDMO     T16     1     ea     2000       1     ea     2000	40	22	\$80,000 \$9,000 \$9,000	Good	Meets standard Meets standard	Sufficient backup power Able to control flows	2 2 2 3 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4       Inspect/assess lift station for deterioration to determine replacement timing/phasing.       Operations       Included a         3       Inspect/assess lift station for deterioration to determine       Operations       Included a	pove 5-10 Year
		2290 MacFarlane Cres.												Inspect/assess Robertson lift station for deterioration to	
12 840 12 840	3065 Gregory rd 3065 Gregory rd	near 2389 ROBERTSON RD near 2389 ROBERTSON RD			119 to 126     Lift station (Robertson LS)       122, 126     Pumps (Robertson LS)	1 ea 2000	40	22	\$250,000 \$250,000 \$250,000 \$250,000	Poor, challenging access, exposed, spray pa Fair, only one pump installed (no redundan		r 2nd Able to manage flows (can be offline for 24 hours due to small service area) Able to manage flows	4 3 3 3 4	2Determine replacement timing/phasing. Install backup power and a second pump. Upgrade electrical and communications systems.Capital Upgrade/New\$40,0002Install second pump in the lift stationCapital Upgrade/NewIncluded a	
12 840	3065 Gregory rd	near 2389 ROBERTSON RD	Site Visit / Photos S LS	COM 50 S-LS-COM-50	122, 123 125 Communication kiosk (Robertson LS)	Image: Constraint of the second se	10	0	\$9,000 \$9,000	Poor, old, no enclosure	Does not meet standard	Requires new technology	3 2 1	3       Upgrade electrical and communication systems       Capital Upgrade/New       Included a         Inspect/assess Terrace lift station for deterioration to       Inspect/assess Terrace lift station for deterioration to	
13 840 13 840	3065 Gregory rd 3065 Gregory rd	near 2359 TERRACE RD	Site Visit / Photos     S     LS       Site Visit / Photos     S     LS	BLD 51 S-LS-BLD-51 PMP 52 S-LS-PMP-52	127 to 133     Lift station (Terrace LS)       130, 133     Pumps (Terrace LS)	1 ea 1980	40	2	\$250,000 \$250,000 \$5,000 \$10,000	Fair, exposed enclosure, difficulty accessing	hatch Does not meet standard, no backup power Meets standard	Meets capacity, although lots of I&I, steep access thru residential yard	3 3 3 3 2	3determine replacement timing/phasing. Install backup power and upgrade electrical and communications systems.Capital Upgrade/New\$35,0003Inspect/assess pump for deterioration to determine power and upgrade for deterioration to determine power and upgrade for deterioration to determineOperationsIncluded a	
13 840 13 840	3065 Gregory rd	near 2359 TERRACE RD near 2359 TERRACE RD	Site Visit / Photos S LS		130, 133     Pumps (Terrace LS)       130 to 132     Communication kiosk (Terrace LS)	2         ea         1980           1         ea         1980	10	0	\$9,000 \$9,000	Poor	Does not meet standard	Meets capacity Requires new technology	3     2       3     3       -     -	3       Inspect/assess pump for deterioration to determine       Operations       Included a         3       Upgrade electrical and communication systems       Capital Upgrade/New       Included a         1       Inspect/assess Wildflower lift station for deterioration to       Included a	
14 840	3065 Gregory rd	near 2089 WILDFLOWER DR	Site Visit / Photos S LS	BLD 55 S-LS-BLD-55	95 to 97 Lift station (Wildflower LS)	1 ea 1994	40	16	\$250,000 \$250,000	Fair, no enclosure, poor aesthetics	Does not meet standard, no backup power	Able to manage flows	3 3	determine replacement timing/phasing. Install backup power and upgrade electrical and communications systems.	2-5 Year
14         840           14         840	3065 Gregory rd 3065 Gregory rd	near 2089 WILDFLOWER DR near 2089 WILDFLOWER DR	{	PMP         56         S-LS-PMP-56           COM         58         S-LS-COM-58	97 Pumps (Wildflower LS) 95, 96 Communication kiosk (Wildflower LS)	2         ea         1994           1         ea         1994	20 10	0	\$5,000 \$10,000 \$9,000 \$9,000	Good, new Flygt pumps Fair, no enclosure	Meets standard Does not meet standard	Able to manage flows Needs to be reviewed	3 2 2 3 3 3	3Inspect/assess pump for deterioration to determine replacement timing/phasing.OperationsIncluded a3Upgrade electrical and communication systemsCapital Upgrade/NewIncluded a	
15 840	3065 Gregory rd	Baron rd (Ingot development	nt) 1501-01-16 S FM	PP 59 S-FM-PP-59	Forcemain pipe, 200mm	SDR35         PVC         100         m         2006	80	68	\$550 \$54,761				1 3	4     Inspect/assess forcemains for deterioration to determine replacement timing/phasing.     Operations     \$20,000	
15         840           15         840           15         840           15         840	3065 Gregory rd 3065 Gregory rd 3065 Gregory rd 3065 Gregory rd	Baron rd (Ingot development Baron rd (Ingot development	int         1501-01-16         S         SS           nt)         1501-01-16         S         SS           nt)         1501-01-16         S         SS           nt)         1501-01-16         S         SS           nt)         1501-01-16         S         SS	CO         65         S-SS-CO-65           S         67         S-SS-S-67	Sewer manhole, SMH L,M,Q,W,U, 2.2-3.3m depths         Sewer cleanouts, SCO S,T, 3.1m depths         Sewermain pipe, 150mm         Sewermain pipe, 200mm	5         ea         2006           2         ea         2006           SDR35         PVC         120         m         2006           SDR35         PVC         179         m         2006	40 40 80 80	28 28 68 68	\$8,000         \$40,000           \$3,000         \$6,000           \$500         \$60,050           \$550         \$98,253				1     2     1       1     2     1       1     2     1	5	10+ Year       10+ Year       10+ Year
15 840 16 840	3065 Gregory rd	Wildflower rd	nt) 1501-01-16 S SS 10808 S FM	B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B	Sewermain pipe, 200mm Forcemain pipe, 200mm	SDR35         PVC         179         m         2006           DR35         PVC         179         m         2006	80	56	\$550 \$38,940				2 3 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 2	S     S       Inspect/assess forcemains for deterioration to determine     Operations       Included in \$	20,000 2-5 Year
16         840           16         840	3065 Gregory rd 3065 Gregory rd	Wildflower rd		MH         69         S-SS-MH-69           CO         70         S-SS-CO-70	Sewer manhole, SMH A, E-H, 2-2.5m depths Sewer cleanout, SCO A	5         ea         1994           1         ea         1001	40	16 16	\$8,000 \$40,000 \$3,000 \$3,000				2 2 2 2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       \$50,000         4       Inspect/assess the collection system for sources of I&I       Operations       Included a	
16 840	3065 Gregory rd	Wildflower rd Wildflower rd	10808 S SS	S 71 S-SS-S-71	Sewermain pipe, 200mm	DR35         PVC         431         m         1994	80	56	\$550 \$237,050				2 2 2	and determine replacement timing/phasing.     Operations     Included a       4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included a	
17         840           17         840	3065 Gregory rd 3065 Gregory rd	BARON ROAD	GIS	PP         72         S-FM-PP-72           PP         73         S-FM-PP-73	Forcemain, 100mm (includes 229m of unknown diameter and 558m of unknown n		80	41	\$450 \$535,827 \$550 \$189,439				2 3 2 3	3Inspect/assess forcemains for deterioration to determine replacement timing/phasing.OperationsIncluded in \$3Inspect/assess forcemains for deterioration to determine replacement timing/phasingOperationsIncluded in \$	
17 840	3065 Gregory rd	BARON ROAD	GIS S SS	S 74 S-SS-S-74	Forcemain, 200mm (includes 103m of unknown material) (GIS minus catalogued le Sewermain, 200mm (GIS minus catalogued length from 1501-01-16)	ength from 1501-01-16)         PVC         344         m         1979           124         m         1979         124         m         1979	80	41	\$550 \$68,090				2 2	Inspect/assess the collection system for sources of I&I     Operations       and determine replacement timing/phasing.     Included a	
18 840	3065 Gregory rd	COLLEGE PLACE	GIS S SS	S 75 S-SS-S-75	Sewermain, unknown diameter, assumed 200mm	79 m 1979	80	41	\$550 \$43,299				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	bove 5-10 Year
19 840	3065 Gregory rd	CUDLIP ROAD	GIS S SS	S 76 S-SS-5-76	Sewermain, unknown diameter, assumed 200mm	266 m 1979	80	41	\$550 \$146,454				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a         Inspect/assess the collection system for sources of I&I       Inspect/assess the collection system for sources of I&I       Inspect/assess the collection system for sources of I&I	
20 840	3065 Gregory rd	DELLEITH COURT	GIS S SS	S         77         S-SS-S-77           PP         78         S-FM-PP-78	Sewermain, unknown diameter, assumed 200mm	107 m 1979	80	41	\$550 \$59,106 \$500 \$1,272,500				2 2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a         3       Inspect/assess forcemains for deterioration to determine       Operations       Included in S	
21         840           21         840	3065 Gregory rd 3065 Gregory rd	GREGORY ROAD GREGORY ROAD	GIS S FM GIS S SS	PP         78         S-FM-PP-78           S         79         S-SS-S-79	Forcemain, 150mm (includes 1,009m of unknown diameter) Sewermain, unknown diameter, assumed 200mm	PVC         2,545         m         1979           532         m         1979         1979	80	41 41	\$500 \$1,272,500 \$550 \$292,856				2 2 2	3       Inspect/assess forcemains for detendration to determine replacement timing/phasing.       Operations       Included in \$         4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	
22 840	3065 Gregory rd	HUNTER ROAD	GIS S SS	S 80 S-SS-S-80	Sewermain, unknown diameter, assumed 200mm	Image: Constraint of the second sec	80	41	\$550 \$42,735				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	bove 5-10 Year
23 840	3065 Gregory rd	HURLEY ROAD	GIS S SS	S 81 S-SS-S-81	Sewermain, unknown diameter, assumed 200mm	319 m 1979	80	41	\$550 \$175,413				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a         4       Inspect/assess the collection system for sources of I&I       Operations       Included a	oove 5-10 Year
24         840           24         840	3065 Gregory rd 3065 Gregory rd	INGOT DRIVE	GISSSSSS	S         82         S-SS-S-82           S         83         S-SS-S-83	Sewermain, 150mm Sewermain, 200mm	448 m 1979 295 m 1979	80	41	\$500 \$223,757 \$550 \$161,995				2 2 2 2 2 2	4Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.OperationsIncluded a4Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.OperationsIncluded a	
25 840	3065 Gregory rd	LAMPMAN ROAD	GIS S SS	S 84 S-SS-S-84	Sewermain, unknown diameter, assumed 200mm	62 m 1979	80	41	\$550 \$34,334				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	bove 5-10 Year
26 840	3065 Gregory rd	LARSEN ROAD	GIS S SS	S 85 S-SS-S-85	Sewermain, unknown diameter, assumed 200mm	257 m 1979	80	41	\$550 \$141,249				2 2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	bove 5-10 Year
27 840	3065 Gregory rd	LONSDALE PLACE	GIS S SS	S 86 S-SS-S-86	Sewermain, unknown diameter, assumed 200mm	305 m 1979	80	41	\$550 \$167,733				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	bove 5-10 Year
28 840	3065 Gregory rd	MACDONALD ROAD	GIS S SS	S 87 S-SS-S-87	Sewermain, unknown diameter, assumed 200mm	127 m 1979	80	41	\$550 \$69,664				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a         1       Inspect/assess forcemains for deterioration to determine       Operations       Inspect/assess	
29         840           29         840	3065 Gregory rd 3065 Gregory rd	MACFARLANE CRESCENT MACFARLANE CRESCENT	GISSFMGISSSS	PP         88         S-FM-PP-88           S         89         S-SS-S-89	Forcemain, unknown diameter, assumed 150mm         Sewermain, unknown diameter, assumed 200mm	194         m         1979           236         m         1979	80	41 41	\$500 \$97,000 \$550 \$129,879				2 3 2 2	replacement timing/phasing.	20,000 2-5 Year
30 840	3065 Gregory rd	MCINTOSH ROAD	GIS S SS	S 90 S-SS-S-90	Sewermain, unknown diameter, assumed 200mm	406 m 1979	80	41	\$550 \$223,116				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a	bove 5-10 Year
31 840	3065 Gregory rd	MEADOWVIEW ROAD	GIS S SS	S 91 S-SS-S-91	Sewermain, unknown diameter, assumed 200mm	731 m 1979	80	41	\$550 \$402,288				2 2	4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included a         4       Inspect/assess the collection system for sources of I&I       Operations       Included a	
32 840	3065 Gregory rd	MINER ROAD	GIS S SS	S 92 S-SS-S-92	Sewermain, 200mm	352 m 1979	80	41	\$550 \$193,628				2 2	4     Inspect/assess the collection system for sources of I&I     Operations     Included a       and determine replacement timing/phasing.     Included a	bove 5-10 Year

# Infrastructure Condition Assessment

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33	840 3065 Gregory rd NUGGET ROAD GIS S S S	93 S-SS-S-93 Sewermain, 150mm	156     m     1979     80     41     \$500     \$78,035       0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0 </td <td>2     4     Inspect/assess the collection system for sources of I&amp;I and determine replacement timing/phasing.     Operations     Included above     5-10 Year</td>	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
34	840     3065 Gregory rd     PARK PLACE     GIS     S     SS     S	94 S-SS-S-94 Sewermain, unknown diameter, assumed 200mm	45         m         1979         80         41         \$50         \$24,574         2	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
35	840     3065 Gregory rd     RAVENHILL ROAD     GIS     S     SS     S	95 S-SS-S-95	$\frac{1}{100}$ $\frac{1}$	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
36	840     3065 Gregory rd     ROBERTSON ROAD     GIS     S     FM     PP	96 S-FM-PP-96 Forcemain, unknown diameter, assumed 150mm	Image: Marking and Markin	3     3     Inspect/assess forcemains for deterioration to determine replacement timing/phasing.     Operations     Included in \$20,000     2-5 Year
36	840 3065 Gregory rd ROBERTSON ROAD GIS S SS S	97 S-SS-S-97	209         m         1979         80         41         \$550         \$114,719	2       4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included above       5-10 Year
37	840     3065 Gregory rd     SAN JUAN PLACE     GIS     S     SS     S	98 S-SS-S-98 Sewermain, unknown diameter, assumed 200mm	1 $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1 $ $ 1$	A     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
38	840     3065 Gregory rd     SKRIMSHIRE ROAD     GIS     S     SS     S	99 S-SS-S-99 Sewermain, unknown diameter, assumed 200mm	10 $10$ $10$ $10$ $10$ $10$ $10$ $10$	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
39	840     3065 Gregory rd     TERRACE ROAD     GIS     S     FM     PP	100 S-FM-PP-100 Forcemain, unknown diameter, assumed 150mm	$ \frac{1}{51} $ $ \frac{1}{m} $ $ \frac{1}{1979} $ $ \frac{1}{1979} $ $ \frac{1}{100} $	3 Binspect/assess forcemains for deterioration to determine Operations Included in \$20,000 2-5 Year
39	840     3065 Gregory rd     TERRACE ROAD     GIS     S     SS     S	101 S-SS-S-101	- 680       - m       - 1979       - 80       - 41       \$550       \$373,944       - 2	2       4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included above       5-10 Year
40	840     3065 Gregory rd     WARD ROAD     GIS     S     SS     S	102 S-SS-S-102 Sewermain, unknown diameter, assumed 200mm	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
41	840     3065 Gregory rd     WILDFLOWER ROAD     GIS     S     FM     PP	103 S-FM-PP-103	Image: Note of the state of	3     3     Inspect/assess forcemains for deterioration to determine replacement timing/phasing.     Operations     Included in \$20,000     2-5 Year
41	840     3065 Gregory rd     WILDFLOWER ROAD     GIS     S     SS     S	104       S-SS-S-104         Sewermain, unknown diameter, assumed 200mm (GIS minus catalogued length from 10808)		2       4       Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.       Operations       Included above       5-10 Year
42	840     3065 Gregory rd     UNKNOWN ROAD     GIS     S     SS     S		a a b a b a b a b a b a b a b a b a b a	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year
43		106     S-SS-SV-106     Service connections	A         A         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B	2 A Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing. Operations Included above 5-10 Year
43	840     3065 Gregory rd     Entire system     GIS     S     SS     MH	107     S-SS-MH-107       Sewer manholes (GIS minus record drawings)	119 ea 1979 ea 300 100 \$8,000 \$952,000 200 100 \$8,000 \$952,000 100 \$100 \$100 \$100 \$100 \$100 \$100 \$	2     4     Inspect/assess the collection system for sources of I&I and determine replacement timing/phasing.     Operations     Included above     5-10 Year

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			Annue		
SEWAG	ETREATMENT	PLANT	Mo	AMISON HERSHFIELD	
FIELD II SYSTEM:	Sharmgan_		DATE:	Nov. 22/17	
LOCATION: SYSTEM CODE: INSPECTED BY	840		PROJECT No.: CVRD STAFF PRESENT:	5170700	
1) Type of	reatment System (Schem	iatic)			a set of a
2) Site Cor	ditions/Security				

840 (1)



**840 (2)** 1 of 67



840 (3)



**840 (4)** 2 of 67



840 (5)



**840 (6)** 3 of 67



840 (7)



**840 (8)** 4 of 67



840 (9)



**840 (10)** 5 of 67



840 (11)



**840 (12)** 6 of 67



840 (13)



**840 (14)** 7 of 67



840 (15)



**840 (16)** 8 of 67



840 (17)



**840 (18)** 9 of 67



840 (19)



**840 (20)** 10 of 67



840 (21)



**840 (22)** 11 of 67



840 (23)



**840 (24)** 12 of 67



840 (25)



**840 (26)** 13 of 67



840 (27)



**840 (28)** 14 of 67



840 (29)



**840 (30)** 15 of 67



840 (31)



**840 (32)** 16 of 67



840 (33)



**840 (34)** 17 of 67



840 (35)



**840 (36)** 18 of 67



840 (37)



**840 (38)** 19 of 67



840 (39)



**840 (40)** 20 of 67



840 (41)



**840 (42)** 21 of 67



840 (43)



**840 (44)** 22 of 67



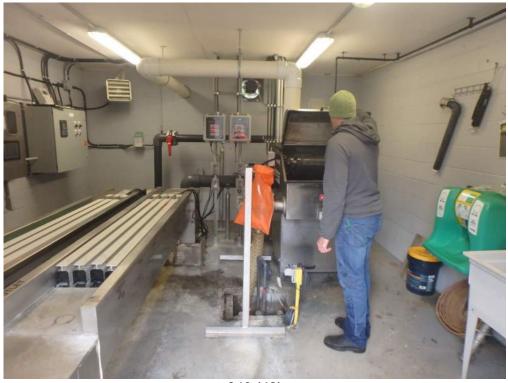
840 (45)



**840 (46)** 23 of 67



840 (47)



**840 (48)** 24 of 67 840 (49)

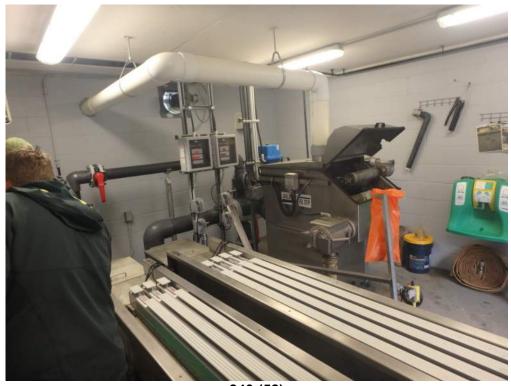


840 Shawnigan Beach Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

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840 (51)



**840 (52)** 26 of 67



840 (53)



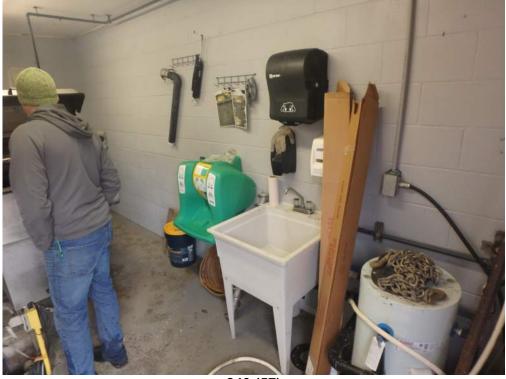
**840 (54)** 27 of 67



840 (55)



**840 (56)** 28 of 67



840 (57)



**840 (58)** 29 of 67



840 (59)



**840 (60)** 30 of 67



840 (61)



**840 (62)** 31 of 67



840 (63)



**840 (64)** 32 of 67



840 (65)



**840 (66)** 33 of 67



840 (67)



**840 (68)** 34 of 67



840 (69)



**<sup>840 (70)</sup>** 35 of 67



840 (71)



**840 (72)** 36 of 67



840 (73)



**840 (74)** 37 of 67



840 (75)



**840 (76)** 38 of 67



840 (77)



**840 (78)** 39 of 67



840 (79)



**840 (80)** 40 of 67

840 (81)



**840 (82)** 41 of 67



840 (83)



**840 (84)** 42 of 67



840 (85)



**840 (86)** 43 of 67 <image>

840 Shawnigan Beach Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

840 (87)



**<sup>840 (88)</sup>** 44 of 67



840 (89)



**840 (90)** 45 of 67



840 (91)



**840 (92)** 46 of 67



840 (93)



**840 (94)** 47 of 67



840 (95)



**840 (96)** 48 of 67



840 (97)



**<sup>840 (98)</sup>** 49 of 67



840 (99)



**840 (100)** 50 of 67



840 (101)



**840 (102)** 51 of 67



840 (103)



**840 (104)** 52 of 67



840 (105)



**840 (106)** 53 of 67



840 (107)



**840 (108)** 54 of 67



840 (109)



**840 (110)** 55 of 67



840 (111)



**840 (112)** 56 of 67



840 (113)



**840 (114)** 57 of 67



840 (115)



**840 (116)** 58 of 67



840 (117)



**840 (118)** 59 of 67



840 (119)



**840 (120)** 60 of 67



840 (121)



**840 (122)** 61 of 67



840 (123)



**840 (124)** 62 of 67



840 (125)



**840 (126)** 63 of 67



840 (127)



**840 (128)** 64 of 67



840 (129)



**840 (130)** 65 of 67



840 (131)



**840 (132)** 66 of 67



840 (133)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Shawnigan Beach - Lift Station - Functional Code 840

		٩	dnoz	۹.	Te s		COMPONENT	CONDITION ASSESSMENT	r –					LIFECYCLE DA	TA	RECOMMENI	DATION		_	If recommended work not		Can the current			OPINION OF	PROBABLE C	COST		
BLDG Name	BLDG Type	Function Cod	Level 1 Major G Elements	Level 2 Grou Elements	Level 3 Individ Elements	ID	Location / Type	Photo Description & History	Condition	Yr New or Last Maior Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Ty pe	Priority	Can this work be phased over multiple years ?	complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use o the facility ?	condition	Quantity	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Shawinigan Beach - Lift Station	Sewage Building	840	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	<ol> <li>The foundation is comprised of cash-in-place concrete foundation with concrete foundation walls. The foundation is concrealed from review, with the exception of some above-grade foundation wall on some elevations.</li> <li>The age of the building was not confirmed and has been assumed. The small open shed adjacent to the building has not been included.</li> </ol>	4 4	2010	21-Nov	r-17 MH	8	50	42	The foundations are expected to remain servicable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$20 SF	\$1,000	0%	5%	5%	\$2,000
Shawinigan Beach - Lift Station	Sewage Building	840	A Substructure	A10 Foundations	A1030 Slab on Grad	le A103001 Standard Son Grade	Slab Interior of Building At- Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	4 4	2010	21-Nov	-17 MH	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$10 SF	\$500	0%	5%	5%	\$1,000
Shawinigan Beach - Lift Station	Sewage Building	840	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation.     No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4 4	2010	21-Nov	-17 MH	8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$40 SF	\$2,000	0%	5%	5%	\$3,000
Shawinigan Beach - Lift Station	Sewage Building	840		CB20 Exterior Enclosure	B2010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	Painted cementitious siding and wood trim are present on the exterior walls.	4 4	2010	21-Nov	-17 MH	8	12	7	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	160	\$8 SF	\$1,280	0%	15%	5%	\$2,000
Shawinigan Beach - Lift Station	Sewage Building	840		CB20 Exterior Enclosure	82010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	Painted cementitious siding and wood trim are present on the exterior walls.	4 4	2010	21-Nov	-17 MH	8	50	42	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	160	\$35 SF	\$5,600	0%	5%	5%	\$7,000
Shawinigan Beach - Lift Station	Sewage Building	840	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	ls B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	4 4	2010	21-Nov	/-17 MH	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	40	\$20 SF	\$800	0%	10%	5%	\$1,000
Shawinigan Beach - Lift Station	Sewage Building	840	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Door	rs Exterior Walls/ Door	<ol> <li>A painted metal door is present on the building.</li> </ol>	4 4	2010	21-Nov	-17 MH	8	30	22	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,000 EA	\$1,000	0%	5%	5%	\$2,000
Shawinigan Beach - Lift Station	Sewage Building	840		D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings		over the doors. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	4 4			и-17 МН	8	40	32	Replace the metal roof at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	50	\$30 SF	\$1,500	0%	5%	5%	\$2,000
Shawinigan Beach - Lift Station	Sewage Building	840	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	e Roof/Sloped Roof Assembly	over the doors. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.				-17 MH	8	25	17	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	10	\$10 SF	\$100	0%	10%	5%	\$1,000
Shawinigan Beach - Lift Station	Sewage Building	840	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	4 4	2010	21-Nov	r-17 MH	8	20	12	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 LS	\$200	0%	0%	5%	\$1,000

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Faci	lity C	ondit	ion	Asse	ssn	nen	t and O	Capit	al Pla	n	
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Facility Condition Assessment and	a Capital Plan
Shawnigan Beach - Lift Station - Fu	unctional Code 840

		ę	ints	_	co	OMPONENT	CONDITION ASSESSI	MENT				LI	IFECYCLE DATA	A	RECOMMEN	DATION			If recommended					OPINION C	F PROBABLI	E COST			10-YEAR CAPITA	IL PLAN			
BLDG Name	BLDG Type	Function Code Level 1 Major Gros Elements	Level 2 Group Elems	Level 3 Individual Elem ents	D	Locati e	noto Description & History	Condition Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action		Type	Priority	Can this work be phased over multiple years ?		this system lead	Can the current condition adversely affect the buildings security of safety	ant	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars	2018 2019 \$0 \$0		2021 2022 \$0 \$0	2024 \$2,000	2026 2027 \$0 \$0
Shawinigan Beach Lift Station	- Sewage 84 Building	40 A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	<ol> <li>The foundation is comprised of cash in-place concrete footin with concrete foundation will. The foundation is concrete review, with the exception of some above-grade foundation on some elevations.</li> <li>The age of the building was not confirmed and has been assumed. The small open shed adjacent to the building has a been included.</li> </ol>	from wall	2010	21-Nov-17	мн	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$20 SF	\$1,000	0%	5%	5% \$	52,000					
Shawinigan Beach Lift Station	- Sewage 84 Building	40 A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Sla on Grade	ab Interior of Building At-Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	4 4	2010	21-Nov-17	мн	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$10 SF	\$500	0%	5%	5% \$	\$1,000					
Shawinigan Beach Lift Station	- Sewage 84 Building	40 B Shell	B10 Superstructure		B10 Superstructure	Interior of Building/ General Superstructure	The superstructure is comprised of wood framing on all four and roof trustes, supported on a casi-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of term leakage that would allude to concealed structural dama	ong-	2010	21-Nov-17	мн	8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	50	\$40 SF	\$2,000	0%	5%	5% \$	\$3,000					
Shawinigan Beach Lift Station	- Sewage 84 Building	40 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted cementitious siding and wood trim are present on th exterior walls.</li> </ol>						12		Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	160	\$8 SF	\$1,280	0%	15%	5% \$	\$2,000				\$2,000	
Shawinigan Beach Lift Station	- Sewage 84 Building	40 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted comentitious siding and wood trim are present on th exterior walls.</li> </ol>	e 4 4	2010	21-Nov-17	МН	8	50	42	The cementitious siding is expected to las the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	t Replacement	3 - Future Renewal	Yes	Yes	No	No	160	\$35 SF	\$5,600	0%	5%	5% \$	\$7,000					
Shawinigan Beach Lift Station	- Sewage 8- Building	40 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	4 4	2010	21-Nov-17	МН	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	40	\$20 SF	\$800	0%	10%	5% \$	\$1,000					
Shawinigan Beach Lift Station	- Sewage 8- Building	40 B Shell	B20 Enclosure	E2030 Exterior Do	ors B203001 Solid Doors	Exterior Walls/ Door	1 A painted metal door is present on the building.	4 4	2010	21-Nov-17	MH	8	30	22	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,000 EA	\$1,000	0%	5%	5% \$	\$2,000					
Shawinigan Beach Lift Station	Building	40 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings		<ol> <li>The roof is standing seam metal roof. A snow guard is prese over the doors.</li> <li>The roof drains, via aluminum gutters to rain water leaders th drain into below grade piping.</li> </ol>	at				8	40	32	Replace the metal roof at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	50	\$30 SF		0%			52,000					
Shawinigan Beach Lift Station	- Sewage 8- Building	40 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is standing seam metal roof. A snow guard is preserver the doors.</li> <li>The roof drains via aluminum gutters to rain water leaders the drain into below grade piping.</li> </ol>	at			МН		25	17	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal		Yes	No	No	10	\$10 SF	\$100	0%	10%		\$1,000					
Shawinigan Beach Lift Station	- Sewage 8- Building	40 C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance	. 4 4	2010	21-Nov-17	МН	8	20	12	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 LS	\$200	0%	0%	5% \$	\$1,000					

Cowichan Valley Regional District

Shawnigan Beach - Lift Station - Functional Code 840



Photo 1

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Shawnigan Beach - Office Building - Functional Code 840

		dno		ē	cc	OMPONENT		CONDITION ASSESSMEN	т						LIFECYCLE DATA	A	RECOMMENDATION			If recommended work not		Can the current			OPINION	F PROBABL	E COST		
BLDG Name	BLDG Type Function Code	Level 1 Major Gr Elements	Level 2 Group Elements	Level 3 Individu Elements	D	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation g	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead to a loss of use of the facility ?	condition	Quantity	Unit Rate	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Shawinigan Beach Office Building	- Office 840 Buildin g	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	s 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the building was not reported and has been assumed.	4	4	1990	21-Nov-17	МН	28	50	22	The foundations are expected to remain Not Applin serviceable for the life of the building. No capital expenses associated with this item are expected.	cable Not Applicable	Yes	Yes	Yes	No	400	\$20 S	F \$8,000	0%	5%	5%	\$9,000
Shawinigan Beach Office Building	- Office 840 Buildin g	A Substructure	A10 Foundations	A1030 Slab on Grad	de A103001 Standard Sla on Grade	b Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade, various flooring was in place over the slab. No evidence of major settlement or heaving was reported or observed.	4	4	1990	21-Nov-17	МН	28	50	22	The concrete slab-on-grade is expected to Not Applin remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	cable Not Applicable	Yes	Yes	Yes	No	400	\$10 S	F \$4,000	0%	5%	5%	\$5,000
Shawinigan Beach Office Building	- Office 840 Buildin g	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ Genera Superstructure	al 1	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	4	4	1990	21-Nov-17	МН	28	50	22	Interior protected structural components Not Applin are expected to last the life of the building. No major capital expenditures are expected to be required.	cable Not Applicable	Yes	Yes	Yes	No	400	\$40 S	F \$16,000	0%	5%	5%	\$18,000
Shawinigan Beach Office Building	- Office 840 Buildin g	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	lls B201001 Exterior Enclosure	Exterior Walls/ Wood Sidin,	ng 1	Painted wood siding and wood trim are present on the exterior walls.	3	3	1990	21-Nov-17	МН	28	12	3	Repaint siding and trim. Repair Allo At the time of painting, replace sealant joints and wood trim as required.	wance 3 - Future Renewal	Yes	Yes	No	No	700	\$8 5	F \$5,600	0%	15%	5%	\$7,000
Shawinigan Beach Office Building	- Office 840 Buildin g	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	lls B201001 Exterior Enclosure	Exterior Walls/ Cementition Siding	us 1	Painted wood siding and wood trim are present on the exterior walls.	3	3	1990	21-Nov-17	МН	28	50	22	The siding is expected to last the life of Replacen the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	nent 3 - Future Renewal	Yes	Yes	No	No	700	\$35 S	F \$24,500	0%	5%	5%	\$28,000
Shawinigan Beach Office Building	- Water 601 Treatm ent Buildin g	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wal	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	4	4	1990	21-Nov-17	МН	28	50	43	The perforated metal soffit is expected to Replacen last the life of the building. No capital expenses associated with this item are expected.	nent 3 - Future Renewal	Yes	Yes	No	No	180	\$20 S	F \$3,600	0%	10%	5%	\$5,000
Shawinigan Beach Office Building	Treatm ent Buildin g	B Shell	CB20 Exterior Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/Windows	1	Metal framed windows are present throughout the building.	3	3	1990	21-Nov-17		28	30	2	Replace windows at the end of its service Replacen life.	Renewal	Yes	Yes	No	No	7	\$200 E		0%	10%	5%	\$2,000
Shawinigan Beach Office Building	- Water 601 Treatm ent Buildin g	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors		1	Wood core doors are present throughout the building.	4	4	1990	21-Nov-17		28	30	2	Replace doors at the end of their service Replacen life.	Renewal	Yes	Yes	No	No	2		A \$1,000	0%	5%	5%	\$2,000
Shawinigan Beach	- Water 601 Treatm ent Buildin g	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly		The roof is sloped assembly with asphalt shingles. A lower sloped root overhang is present at the rear, it is assumed that this roof has a sheet style membrane installed. The roof drains via aluminum gutters to rain water leaders.	4	4		21-Nov-17		28	25	2	Replace the roofing at the end of its Replacen service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	nent 3 - Future Renewal	No	Yes	No	No	400	\$10 S	F \$4,000	0%	5%	5%	\$5,000
Shawinigan Beach Office Building	- Water 601 Treatm ent Buildin g	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	y 1	The roof is sloped assembly with asphalt shingles. A lower sloped roof overhang is present at the rear, it is assumed that this roof has a sheet style membrane installed. The roof drains via aluminum gutters to rain water leaders.	4	4	1990	21-Nov-17	МН	28	25	1	Replace gutters at the end of their service Replacen life.	nent 3 - Future Renewal	Yes	Yes	No	No	80	\$10 S	F \$800	0%	10%	5%	\$1,000
Shawinigan Beach Office Building	- Water 601 Treatm ent Buildin g	C Interiors	C30 Interior Finishe	es C3010 Wall Finishes	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior gypsum walls and ceilings are painted.	4	4	1990	21-Nov-17	МН	28	20	13	Repaint interiors as required. Repair Allo Note: a long service life has been included to reflect to building usage.	wance 3 - Future Renewal	Yes	Yes	No	No	1	\$2,500 L	\$\$\$,500	0%	0%	5%	\$3,000
Shawinigan Beach Office Building	- Water 601 Treatm ent Buildin g	C Interiors	C30 Interior Finishe	25 C3020 Floor Finishe	C302099 Other Floorin and Floor Finishes	Interior/Interior Finishes	2	The interior gypsum walls and ceilings are painted.	4	4	1990	21-Nov-17	МН	28	20	5	Repaint interiors as required. Repair Allo Note: a long service life has been included to reflect to building usage.	wance 3 - Future Renewal	Yes	Yes	No	No	400	\$10 S	F \$4,000	0%	0%	5%	\$5,000
Shawinigan Beach Office Building	- Water 601 Treatm ent Buildin g	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipmen	nt	An exterior light is present on the building near the entrance.	4	4	1990	21-Nov-17	МН	28	20	2	Replace lights at the end of their service Replacen life.	nent 3 - Future Renewal	Yes	Yes	No	No	1	\$200 L	5 \$200	0%	0%	5%	\$1,000

Facility Co	ondition A	gional District ssessment and Office Building	d Capital Plan																																
		fe	ments	nal	co	MPONENT	CONDITION ASSESSME	NT	1 1			LIFECYCLE DA	TA .	RECOMMEN	DATION		-	If recommended work not		Can the current			OPINIO	OF PROBAB	LE COST			10-YEAR CA	PITAL PLAN	_		1 1			
BLDG Nam	B LDG Type	Function Coo Level 1 Major G Elements	Level 2 Group Ele	Level 3 Individ Elements	D	Location / Type	Photo Description & History	Condition	Performance Yr New or Last	Major Action Assessment Date Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOI or Major Action	Recommendation	Туре	Priority	Can this work be phased over multiple years ?	complete can the rate of deterioration be expected to increase ?	Will a failure in this system lead to a loss of use of the facility ?	condition adversely affect the buildings security of safety	Quantity	Unit Rate	Unit Subtotal Repair or Replacement Cos	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars	2018 \$1,000	2019 2024 \$10,000 \$700			2023 \$0	2024 20 \$0 \$1	025 2026 \$0 \$0	
Shawinigan Beac Office Building	h - Office 840 Building	0 A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1 The foundation is comprised of cast-in-place concrete footings with concrete foundation wills. The foundation is conceiled for review, with the exception of some above-grade foundation wal on some elevations. The age of the building was not reported and has been assumed a summer the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed the same of the building was not reported and has been assumed as a same of the same of th	4 m	4 15	990 21-Nov-17 MH	28	50	22	The foundations are expected to remain serviceable for the life of the building. N capital expenses associated with this iten are expected.	Not Applicable o	Not Applicable	Yes	Yes	Yes	No	400	\$20	SF \$8,000	0%	5%	5%	\$9,000								
Shawinigan Beac Office Building	h - Office 840 Building	0 A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Slat on Grade	<ul> <li>Interior of Building At-Grade/ Slab-on-Grade</li> </ul>	<ol> <li>The floor is concrete slab-on-grade, various flooring was in place over the slab. No evidence of major settlement or heaving was reported or observed.</li> </ol>	: 4	4 15	990 21-Nov-17 MH	28	50	22	The concrete slab-on-grade is expected t remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	o Not Applicable	Not Applicable	Yes	Yes	Yes	No	400	\$10	SF \$4,000	0%	5%	5%	\$5,000								
Shawinigan Beac Office Building	h - Office 840 Building	D B Shell	B10 Superstructure	B10 Superstructure	e B10 Superstructure	Interior of Building/General Superstructure	The superstructure is comprised of each firming on all four wal and roof truesses, supported on a cast-in-place concrete foundation.     No settlement or other evidence of structural distress was observed or protect. There was no evidence or report of fong term leakage that would allude to concealed structural diamage.		4 15	990 21-Nov-17 MH	28	50	22	Interior protected structural component are expected to last the life of the building. No major capital expenditures are expected to be required.	s Not Applicable	Not Applicable	Yes	Yes	Yes	No	400	\$40	SF \$16,000	0%	5%	5%	\$18,000								
Shawinigan Beac Office Building	h - Office 840 Building	D B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Wood Siding	<ol> <li>Painted wood siding and wood trim are present on the exterior walls.</li> </ol>	3	3 15	990 21-Nov-17 MH	28	12	3	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowano	3 - Future Renewal	Yes	Yes	No	No	700	\$8	SF \$5,600	0%	15%	5%	\$7,000		\$70						
Shawinigan Beac Office Building	h - Office 840 Building	0 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted wood siding and wood trim are present on the exterior walls.</li> </ol>	3	3 15	990 21-Nov-17 MH	28	50	22	The siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as par of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	700	\$35	SF \$24,500	0%	5%	5%	\$28,000								
Shawinigan Beac Office Building	ent Building	1 B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	4	4 15	990 21-Nov-17 MH	28	50	43	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	p Replacement	3 - Future Renewal	Yes	Yes	No	No	180	\$20	SF \$3,600	0%	10%	5%	\$5,000								
Shawinigan Beac Office Building	h - Water 601 Treatm ent Building	1 B Shell	CB20 Exterior Enclosure	B2020 Exterior Windows	B202001 Windows	Exterior Walls/Windows	<ol> <li>Metal framed windows are present throughout the building.</li> </ol>	3	3 15	390 21-Nov-17 MH	28	30	2	Replace windows at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	7	\$200	EA \$1,400	0%	10%	5%	\$2,000		\$2,000						
Shawinigan Beac Office Building	h - Water 601 Treatm ent Building	1 B Shell	B20 Enclosure	E2030 Exterior Do	ors B203001 Solid Doors	Exterior Walls/ Door	<ol> <li>Wood core doors are present throughout the building.</li> </ol>	4	4 19	990 21-Nov-17 MH	28	30	2	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$500	EA \$1,000	0%	5%	5%	\$2,000		\$2,000						
Shawinigan Beac Office Building	ent Building	1 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The root is sloped assembly with signal stringles. A lower sloped root overhang is present at the rear, it is assumed that the roof has a sheet style membrane installed.</li> <li>The roof drains via aluminum gutters to rain water leaders.</li> </ol>	4		990 21-Nov-17 MH	28	25	2	Replace the roofing at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	400	\$10	SF \$4,000	0%	5%	5%	\$5,000		\$5,000						
Shawinigan Beac Office Building	h - Water 603 Treatm ent Building	1 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is sloped assembly with sight shingles. A lower sloped roof overhang is prevent at the rear, it is assumed that th roof has a sheet style membrane installed.</li> <li>The roof drains via aluminum gutters to rain water leaders.</li> </ol>	4 is	4 15	990 21-Nov-17 MH	28	25	1	Replace gutters at the end of their servic life.	e Replacement	3 - Future Renewal	Yes	Yes	No	No	80	\$10	SF \$800	0%	10%	5%	\$1,000	\$1,000							
Shawinigan Beac Office Building	h - Water 601 Treatm ent Building	1 C Interiors	C30 Interior Finishe	s C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2 The interior gypsum walls and ceilings are painted.	4	4 15	990 21-Nov-17 MH	28	20	13	Repaint Interiors as required. Note: a long service life has been include to reflect to building usage.	Repair Allowano	3 - Future Renewal	Yes	Yes	No	No	1	\$2,500	LS \$2,500	0%	0%	5%	\$3,000								
Shawinigan Beac Office Building	h - Water 601 Treatm ent Building	1 C Interiors	C30 Interior Finishe	s C3020 Floor Finish	es C302099 Other Floorir and Floor Finishes	ig Interior/Interior Finishes	2 The interior gypsum walls and ceilings are painted.	4	4 15	990 21-Nov-17 MH	28	20	5	Repaint interiors as required. Note: a long service life has been include to reflect to building usage.	Repair Allowano	3 - Future Renewal	Yes	Yes	No	No	400	\$10	SF \$4,000	0%	0%	5%	\$5,000				\$5,000				
Shawinigan Beac Office Building	h - Water 601 Treatm ent Building	1 C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	4	4 15	390 21-Nov-17 MH	28	20	2	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$200	0%	0%	5%	\$1,000		\$1,000						

Cowichan Valley Regional District

## hawnigan Beach - Office Building - Functional Code 840



Photo 1



Photo 2

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Shawnigan Beach - Sewage Treatment Plant - Functional Code 840

	_		9		-	C	OMPONENT	_		т				_		LIFECYCLE DA	TA	RECOMMEND				If recommended					OPINION	OF PROBAB	E COST		
BLDG Name	BLDG Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elements	Level 3 Individua Elements	D	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead o a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit Subtotal Repair or Replacement	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Shawinigan Beach Sewage Treatment Plant		840	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundation		The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of the building was not confirmed and has been assumed.	4	4	2000	21-Nov-17	МН	18	50	32	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	620	\$20	SF \$12,400	0%	10%	5%	\$15,000
Shawinigan Beach Sewage Treatment Plant			A Substructure	A10 Foundations	A1030 Slab on Grad	e A103001 Standard Sla on Grade	ab Interior of Building At- Grade/ Slab-on-Grade		The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	4	4	2000	21-Nov-17	МН	18	50	32	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated regains; if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	620	\$10	SF \$6,200	0%	10%	5%	\$8,000
Shawinigan Beach Sewage Treatment Plant			B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ Gener Superstructure		The superstructure is comprised of masonry blocks with a wood framed ceiling. Some efflorescence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long term leakage that would allude to concealed structural damage.	4	4	2000	21-Nov-17	МН	18	50	32	Masonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	Repair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA \$2,000	0%	10%	5%	\$3,000
Shawinigan Beach Sewage Treatment Plant			B Shell	B20 Exterior Enclosure	B2010 Exterior Wall	s B201001 Exterior Enclosure	Exterior Walls/Wood Elements		Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.	3	3	2000	21-Nov-17	МН	18	12	2	Repaint wood cladding, install flashing over exposed wood roof framing.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA \$1,500	0%	10%	5%	\$2,000
Shawinigan Beach Sewage Treatment Plant		840	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	A painted metal door is present on the building.	4	4	2000	21-Nov-17	MH	18	30	12	Replace door at the end of its service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA \$1,500	0%	5%	5%	\$2,000
Shawinigan Beach Sewage Treatment Plant			B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly		The roof is sloped assembly which has been waterproofed with a metal roof assembly. The roof drains via aluminum gutters to rain water leaders . Section of detached roof were noted.	4	4	2000	21-Nov-17	МН	18	40	1	Repair detached sections of roof. Ongoing maintenance of the roof should include review of all penetrations when required.	Repair Allowance	3 - Future Renewal	No	Yes	No	No	1	\$1,500	LS \$1,500	0%	5%	5%	\$2,000
Shawinigan Beach Sewage Treatment Plant		840	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly		The roof is sloped assembly which has been waterproofed with a metal roof assembly. The roof drains via aluminum gutters to rain water leaders . Section of detached roof were noted.	4	4	2000	21-Nov-17	МН	18	40	22	Replace metal roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	Yes	Yes	No	No	650	\$20	SF \$13,000	0%	10%	5%	\$16,000
Shawinigan Beach Sewage Treatment Plant			C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipmer	t	An exterior light is present on the building near the entrance.	4	4	2000	21-Nov-17	МН	18	20	2	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$200	0%	0%	5%	\$1,000

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Shawnigan Beach - Sewage Treatment Plant - Functional Code 840

		ę	ents	7	c	OMPONENT		CONDITION ASSESSME	NT					LIFECYCLE DAT	A	RECOMMENDATION			If recommende					OPINIO	OF PROB	ABLE COST			10-YEAR	CAPITAL PLAN							
BLDG Name	B.D.G.Type	Function Code Level 1 Major Gro Elements	Level 2 Group Elem	Level 3 Individua Elements	ID	Location / Type	Photo	Description & History	Canditian	Performance Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Ufe Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Priority	Can this work I phased over multiple years	rate of	he this system lead to a loss of use of the facility 2	adversely affect	anti	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars	2018 \$3,000	2019 20 \$2,000 \$	020 202 \$0 \$0	\$4,000	2023 ) \$0	2024 \$0	2025 \$0	2026 2 \$0 \$	2027 ;1,000
Shawinigan Beach Sewage Treatment Plant		40 A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast in-place concrete footings with concrete footings, with concrete footings, with the exception of some above-grade foundation wa on some elevations. The age of the building was not confirmed and has been assumed.	m	4 2000	21-Nov-1	-17 MH	18	50	32	The foundations are expected to remain Not Applin servicable for the file of the building. No capital expenses associated with this item are expected.	ible No Applic		Yes	Yes	No	620	\$20 SF	\$12,400	09	5 10%	6 5%	\$15,000									
Shawinigan Beach Sewage Treatment Plant		40 A Substructure	A10 Foundations	A1030 Slab on Grad	A103001 Standard S on Grade	lab Interior of Building At-Grade Slab-on-Grade	e/ 1	The floor is concrete slab-on-grade. Isolated hairline cracking w observed. No evidence of major settlement or heaving was reported or observed.	as 4	4 2000	21-Nov-1	-17 MH	18	50	32	The concrete slab-on-grade is expected to Not Applin remain serviceable for the life of the building, with isolated repairs, in needed. No capital expenses associated with this item are expected.	ible No Applic		Yes	Yes	No	620	\$10 SF	\$6,200	09	5 10%	6 5%	\$8,000									
Shawinigan Beach Sewage Treatment Plant		40 B Shell	B10 Superstructur	B10 Superstructure	B10 Superstructure	Interior of Building/ Genera Superstructure	1 1	The superstructure is comprised of missiony blocks with a wook frame ceiling. Source of Effectscence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no ender or reports of long term leakage that would allude to concealed structural damage.	g-	4 2000	21-Nov-1	-17 MH	18	50	32	Maconvy structural components are expected to last the life of the building. A contingency budget has been included for isolated montar joint replacement and sealant replacement throughout the cinder block assemblies.	ance 3 - Fu Rene		Yes	Yes	No	1	\$2,000 E/	\$2,000	09	6 10%	6 5%	\$3,000									
Shawinigan Beach Sewage Treatment Plant		40 B Shell	B20 Exterior Enclosure	B2010 Exterior Wall	B201001 Exterior Enclosure	Exterior Walls/Wood Elements		Wood cladding and wood trim (included roof framing) is presen through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.	t 3	3 2000	21-Nov-1	-17 MH	18	12	2	Repaint wood cladding, install flashing Repair Allor over exposed wood roof framing.	ance 3 - Fu Rene		Yes	No	No	1	\$1,500 EA	\$1,500	09	6 10%	6 5%	\$2,000		\$2,000							
Shawinigan Beach Sewage Treatment Plant		40 B Shell	B20 Enclosure	E2030 Exterior Door	s B203001 Solid Doors	Exterior Walls/ Door	1	A painted metal door is present on the building.	4	4 2000	21-Nov-1	-17 MH	18	30	12	Replace door at the end of its service life. Replacen	ent 3 - Fu Rene		Yes	No	No	1	\$1,500 EA	\$1,500	09	6 5%	5%	\$2,000				\$4,000	)				
Shawinigan Beach Sewage Treatment Plant		40 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly		The roof as sloped assembly which has been waterproofed with metal roof assembly. The roof drains via aluminum gutters to rain water leaders . Section of detached roof were noted.							1	Repair detached sections of roof. Repair Allor Ongoing maintenance of the roof should Include review of all penetrations when required.	ance 3 - Fu Rene		Yes	No	No	1	\$1,500 LS	\$1,500	09	6 5%	5%	\$2,000	\$2,000								
Shawinigan Beach Sewage Treatment Plant	Treatment Plant	40 B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	1	The roof is sloped assembly which has been waterproofed with metal roof assembly. The roof drains via aluminum gutters to rain water leaders . Section of detached roof were noted.	a 4	4 2000	21-Nov-1	-17 MH	18	40	22	Replace metal roofing at the end of its Replacen service life. Ongoing maintenance of the roof should include review of all penetrations when required.	ent 3 - Fu Rene		Yes	No	No	650	\$20 SF	\$13,000	09	6 10%	6 5%	\$16,000									
Shawinigan Beach Sewage Treatment Plant		40 C Interiors	DS0 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment	1	An exterior light is present on the building near the entrance.	4	4 2000	21-Nov-1	-17 MH	18	20	2	Replace lights at the end of their service Replacen life.	ent 3 - Fu Rene		Yes	No	No	1	\$200 LS	\$200	09	6 0%	5%	\$1,000	\$1,000							\$1	\$1,000

Cowichan Valley Regional District

Shawnigan Beach - Sewage Treatment Plant - Functional Code 840



Photo 1



Photo 2



July 18, 2018

**Date Prepared** 

## 850 - Kerry Village Sewer

Infrastructure Condition Assessment and Capital Plan 1070 Waterman Road, Mill Bay, BC

### **PROPERTY STATISTICS AND REPORT SUMMARY**

System Replacement Cost Estimate	\$3,920,429	
Number of Users	93	
Replacement Cost Per User	\$42,155	
Annual Replacement Cost (40 Years)	\$46,463	per year
Annual Replacement Cost (80 Years)	\$48,400	per year
10 Year Capital Plan Total	\$50,000	
10 Year Operations and Maintenance Plan Total	\$120,000	

### **PROPERTY DESCRIPTION**

The Kerry Village Sewer System started construction in 1984 and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	1984	Innova Report
Wastewater Treatment Plant	2010	Record Drawings (1585-01_STP, 09175-101)
Rapid Infiltration Basin (RIB)	2011	Record Drawings (1585-01_RIB)
Briarwood Dr/Streamside Pl/Lilmac Rd (Forcemain)	2011	Record Drawings (1581-01)
Lift Station	2015	Record Drawings (121-22982-01)
Bourban Rd/Shawnigan Lake Rd (Forcemain)	2015	Record Drawings (121-22982-01)

### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

### **CONTACT INFORMATION**

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com

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O:\Victoria\Proj\5170700\7) Design and Evaluation +\49 - Water and Sewer Systems\Inventories\Systems\850 Kerry Village Sewer\850\_TAB\_KerryVillageSewer\_2018-07-18



# 850 - Kerry Village Sewer

Infrastructure Condition Assessment and Capital Plan 1070 Waterman Road, Mill Bay, BC

**Date Prepared** 

July 18, 2018

Conta
Adam
and K

Date / Revision	Contact	Comment
November 21, 2017	Adam Greenwood	The visual reviews were completed on November 21-24,
	and Kieran Bertsch	2017 by Adam Greenwood and Kieran Bertsch of MH.
		During our review of the systems we were accompanied by
		Mr. Todd Etherington and Mr. David Parker, who provided
		access to each system.
March 2, 2018	Caleb Light	Rob Grant and Andrea Kross from CVRD provided the
		geodatabase to MH. Caleb Light from MH tabulated the
		length of infrastructure in the developed area of the system
		from the database. The GIS items are the difference
		between the record drawings and the length of
		infrastructure tabulated in the geodatabase.
March 2, 2018	Adam Greenwood	Draft inventory assessment was issued to CVRD for review.
	and Kieran Bertsch	
July 4, 2018	Adam Greenwood	Updated draft inventory assessment was issued to CVRD for
	and Kieran Bertsch	review.
July 18, 2018	Adam Greenwood	Updated inventory assessment was issued to CVRD during
	and Kieran Bertsch	the March 27, 2018 review meeting. Updates included the
		following tasks:
		1) Reorganize linear assets based on street names
		2) Complete building asset management seperately (to be
		completed by Chris Raudoy)
		<ol> <li>Include disclaimer on cost estimates</li> </ol>
		4) Create seperate tables for O&M tasks and Capital Plans
		and update actions to Operations, Maintenance, Capital
		Renewal and Capital Upgrade/New



Date Prepared July 18, 2018

## **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

## Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 Tear)	3						
Important	4	2	S-STP-UV-25	Labital Upgrade/New	Replace UV units with proper wastewater UV units in wastewater treatment plant.	\$50,000	4
(1 - 2 Year)	5						\$50,000
	6						
Short Term	7						
(2 - 5 Year)	8						\$0
	9						
	10						
Medium Term	11						\$0
(5 - 10 Year)	12						
						Total	\$50,000

## Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical (0 - 1 Year)	1						
	2						\$0
	3						
Important	4						
Important (1 - 2 Year)	5						\$0
(1 2 . car)	6						
	7	1	S-STP-STP-2	Operations	Inspect/assess RBC wastewater treatment unit for deterioration to determine replacement timing/phasing.	\$10,000	
Short Term	8						
(2 - 5 Year)	9						\$10,000
. ,	10						
	11 12						
	13	2	ALL	Operations	Inspect/assess wastewater treatment plant for deterioration to determine replacement timing/phasing.	\$10,000	
	14	3	S-STP-DF-26	Operations	Inspect/assess RIB for deterioration to determine replacement timing/phasing.	\$10,000	
Medium Term	15	4	ALL	Operations	Inspect/assess lift station for deterioration to determine replacement timing/phasing.	\$10,000	¢110.000
(5 - 10 Year)	16	5 to 11, 14, and 17 to 21	As Noted	Operations	Inspect/assess forcemains for deterioration to determine replacement timing/phasing.	\$60,000	\$110,000
	17	11 to 22	As Noted	Operations	Inspect/assess collection system for deterioration to determine replacement timing/phasing.	\$20,000	
	18						
						Total	\$120,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner: Cowichan Valley Region System: 850 Kerr	onal District (CVRD) rry Village Sewer		Infrastructure Condition Assessment													
Owner:Cowichan Valley RegionSystem:850 KerrCivic Address:1070 Waterman RoadGeographic Location:West of Mill BayCustomers:Parcels:Users:Users:	97							Current Year 2018	Total Replacement Value	\$3,920,429						
Asset ID Loca Function Code				Ass	Asset Code ID Asset Code Photo Description		Asset Inventory	Current Year     2018       Installed     Year Renewed     Service Life Expectancy     Est. Remaining Service			Condition Assessment		Recommendations / Action Items		10 Year Capital P	Plan hate Timing Comment/Question to be resolved
		Location Waterman rd STP		STP STP		Make Model Material Quantity		InstalledYear RenewedService Life ExpectancyEst. Remaining Service20104032	Refer to Kerry Village Sewer System Building Condition	Replacement value c	of Asset     Physical Condition     Level of Service Condition     Demand Condition		e Severity of Failure Condition Description		ork Budget Estim	Le liming Comment/Question to be resolved
1 850 1070	70 Waterman Road	Waterman rd STP	1585-01_STP S		2 S-STP-STP-2 22 to 27, 39 RBC unit	1	еа	2010 40 32	\$100,000	\$100,000	Fair - bioreactor OK but issues with settlement on one slab, structure OK, roof rotten	3	2 3 Inspect/assess RBC wastewater treating for deterioration to determine replace timing/phasing.		ons \$10,000	2-5 Year
2 850 107	70 Waterman Road	Waterman rd STP		STP STP	3     S-STP-STP-3     6 to 17, MOV 1     Sewage treatment plant building (USBF)	1	еа	2010 40 32	Refer to Kerry Village Sewer System Building Condition		Good - no inlet screen (problem for gravity system) Meets standard Lots of operational challlenges, sensitive to changing conditions					
2 850 1070	70 Waterman Road	Waterman rd STP		STP ET		1	еа	2010 40 32	Assessment. \$150,000	\$150,000		2	2 4 Inspect/assess wastewater treatment deterioration to determine replacem		ons \$10,000	5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP		STP FTR	5     S-STP-FTR-5       Influent basket screen, 12mm	1	еа	2010 20 12	\$10,000	\$10,000		2	timing/phasing.       2     4       4     deterioration to determine replacem       timing/phasing.	nt Operati	ons Included abo	ve 5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP		STP ET		Concrete 1	ea	2010 40 32	\$150,000	\$150,000		2	timing/phasing.       2     4       4     deterioration to determine replacem timing/phasing.	nt Operati	ins Included abo	ve 5-10 Year
2 850 107	70 Waterman Road	Waterman rd STP	09175-101 S		7 S-STP-PMP-7 Pump, equalization pump, 3.8 L/s @ 6m, .37kW (0.5hp), 230/3/60	Myers SX50H-23 Cast iron 2		2010 20 12	\$5,000	\$10,000		2	timing/phasing.       2     4       Inspect/assess wastewater treatment deterioration to determine replacem timing/phasing.		ins Included abo	ve 5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP	09175-101 S	STP AM	9 S-STP-AM-9 28 to 32 Anoxic mixer, 200mm, 0.9 kW (1.2 hp) 230/1/60	Flygt SR 4620 Stainless steel 1	ea		\$20,000	\$20,000		2	24Inspect/assess wastewater treatment deterioration to determine replacem timing/phasing.		ins Included abo	ove 5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP	09175-101 S		10 S-STP-FTR-10 Sludge blanket filter, 95 m3/d, 22.8 mg BOD/L	Epoxy coated steel 1	ea	2010 20 12	\$150,000	\$150,000		2	2     4     Inspect/assess wastewater treatment       2     4     deterioration to determine replacem       timing/phasing.	nt Operati	ins Included abo	ove 5-10 Year
2 850 107	70 Waterman Road	Waterman rd STP		STP ET	11     S-STP-ET-11     Filter feed tank, 8 m3	Epoxy coated steel 1	еа	2010 40 32	\$40,000	\$40,000		2	2       4       Inspect/assess wastewater treatment         2       4       deterioration to determine replacem         timing/phasing.       Inspect/assess wastewater treatment	nt Operati	ons Included abo	ove 5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP			12       S-STP-PMP-12       Filter feed pump, 3.8L/s @21m, 50mm, 0.74 kW (1hp), 230/3/60	Myers   ME100S-23   Cast iron   2	ea		\$5,000	\$10,000		2	2       4       Inspect/assess wastewater treatment         2       4       deterioration to determine replacem         timing/phasing.       Inspect/assess wastewater treatment	nt Operati	ons Included abo	ove 5-10 Year
		Waterman rd STP			14       S-STP-PMP-14       Filter backwash pump, 3.8L/s @ 21m, 50mm, 1.1 kW, 230/3/60	Myers ME150-23 Cast iron 1	ea	2010 20 12	\$5,000	\$5,000		2	2     4     deterioration to determine replacem timing/phasing.       Image: 1 to 1 t	nt Operati	ns Included abo	ove 5-10 Year
		Waterman rd STP			15     S-STP-ET-15     Treated effluent tank, 10m3	Epoxy coated steel 1			\$40,000	\$40,000		2	2     4     deterioration to determine replacem timing/phasing.       Inspect/assess wastewater treatment	plant for		ove 5-10 Year
		Waterman rd STP			16       S-STP-PMP-16       Effluent pump, 4.2 L/s @ 54m, 65mm, 7.5 kW, 230/3/60	Myers WG100H Cast iron 2	ea		\$5,000	\$10,000		2	2       4       deterioration to determine replacem timing/phasing.         Inspect/assess wastewater treatment       Inspect/assess wastewater treatment	plant for		ove 5-10 Year
2 850 1070		Waterman rd STP Waterman rd STP			18     S-STP-ET-18     Sludge holding tank       19     S-STP-COA-19     Sludge pre-thickener	Ecofluid 1	ea		\$60,000	\$60,000 \$20,000		2	2     4     deterioration to determine replacem timing/phasing.       Inspect/assess wastewater treatment deterioration to determine replacem	plant for		ove 5-10 Year
		Waterman rd STP				Myers WGL20F-23 Cast iron 1	ea		\$20,000 \$5,000	\$20,000		2	24deterioration to determine replacem timing/phasing.24Inspect/assess wastewater treatment deterioration to determine replacem	plant for		ove 5-10 Year
		Waterman rd STP			21         S-STP-COM-21         11, 12, 16, 17         Communications (STP)		ea		\$20,000	\$20,000	Good	2	Image: Second and the second action of	plant for	ons Included abo	
		Waterman rd STP				1	ea		\$60,000	\$60,000	Good	2	timing/phasing.       2     4       4     deterioration to determine replacem	plant for		ove 5-10 Year
2 850 107	70 Waterman Road	Waterman rd STP		STP FTR	23     S-STP-FTR-23     19, 22     Purafil odour control system (from aerated EQ tank)	1	LS	2014 20 16	\$30,000	\$30,000	Good     Meets standard     Complaints have decreased	2	timing/phasing.244Inspect/assess wastewater treatment deterioration to determine replacem		ons Included abo	ove 5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP		STP PP	24         S-STP-PP-24         9, 10, 14, 15, 28 to 32, 34         Process piping c/w pipes, valves, tees	1	LS	2010 40 32	\$10,000	\$10,000		2	timing/phasing.       2     4       4     Inspect/assess wastewater treatment deterioration to determine replacem timing (abasing)		ins Included abo	ove 5-10 Year
2 850 1070	70 Waterman Road	Waterman rd STP		STP UV	25         S-STP-UV-25         9, 10, 13, 35 to 37         UV treatment unit	3	еа	2010 20 12	\$15,000	\$45,000	Poor - units not designed for wastewater Does not meet standard Not working	5	2     2     Replace UV units with proper wastew units in wastewater treatment plant.	ter UV Capital Upgra	de/New \$50,000	1-2 Year
3 850 107	70 Waterman Road	Briarwood dr	1585-01_RIB S		26     S-STP-DF-26     1 to 4     Rapid infiltration basin c/w valves, process piping	2	ea	2011 60 53	\$50,000	\$100,000	Good Meets standard Able to meet capacity	2	2 4 Inspect/assess RIB for deterioration t replacement timing/phasing.	determine Operati	ons \$10,000	5-10 Year
	70 Waterman Road 70 Waterman Road	Kerry park rec centre lift station Kerry park rec centre lift station	121-22982-01 S		27S-LS-BLD-2741 to 44Lift station28S-LS-PMP-2841, 42Pump, 5hp submersible grinder sewage pump, 230/3/60Hz, 3450 rpm, with capacity of 5L/s	BarnesXSGV5032L2	ea ea	2015     40     37       2015     20     17	\$350,000 \$10,000	\$350,000 \$20,000	Good - fenced in rec centre site       Meets standard       Able to meet capacity (only receieves effluent from rec centre and septic effluent from ball field toilets)         Good       Meets standard       Able to meet capacity (only receieves effluent from rec centre and septic effluent from ball field toilets)	1	34Inspect/assess lift station for deterior determine replacement timing/phasi34Inspect/assess lift station for deterior	g. Operation to Operation to Operation		
		Kerry park rec centre lift station		LS COM			LS		\$9,000	\$9,000	Good         Meets standard           Good         Meets standard	1	determine replacement timing/phasi       3     4       A     Inspect/assess lift station for determine replacement timing/phasi	g. Operati ation to Operati g.		
	70 Waterman Road 70 Waterman Road	Kerry park rec centre lift station Kerry park rec centre lift station			30     S-LS-PP-30     41     Process piping c/w pipes, valves, tees       31     S-LS-FM-31     41, 42     Flow meter c/w chamber	1	LS	2015     40     37       2015     20     17	\$20,000 \$10,000	\$20,000 \$10,000	Good     Meets standard       Good     Meets standard	1	34Inspect/assess lift station for deterior determine replacement timing/phasi34Inspect/assess lift station for deterior determine replacement timing/phasi	g. Operati ation to Operati		ove 5-10 Year
4 850 1070	70 Waterman Road	Kerry park rec centre lift station	Site Visit / Photos S			1	еа		\$40,000	\$40,000	Good Meets standard	1	determine replacement timing/phasi       3     4       Inspect/assess lift station for deterior       determine replacement timing/phasi	ation to Operati		
	70 Waterman Road	Briarwood dr. 1+037 - 1+116	1585-01 S		33     S-FM-PP-33   Forcemain, 50mm	SDR21 PVC 79	m		\$400	\$31,600		1	3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi         3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi	g. ation to		
		Briarwood dr. 1+118 - 1+250, 0+000-0+010 Briarwood dr. 1+080 - 1+222	1585-01 S		35 S-FM-PP-35 Forcemain, 75mm	SDR21         PVC         142           SDR21         PVC         142			\$425 \$425	\$60,350 \$60,350		1	determine replacement timing/phasi       3     4       3     4	g. Operati ation to g. Operati		
5 850 1070	70 Waterman Road	Briarwood to Lilmac. 0+010-0+188	1585-01 S	FM PP	36         S-FM-PP-36         Forcemain, 50mm	HDPE 178	m	2011 80 73	\$400	\$71,200		1	3 4 Inspect/assess forcemains for deterior determine replacement timing/phasi	g.	Included in \$60	.000 <b>5-10 Year</b>
6         850         1070           6         850         1070           6         850         1070           6         850         1070		Bourban rd 0+045 - 0+160 Bourban rd. 0+000 - 0+045 (SMH A) Bourban rd. 0+045	121-22982-01 S	FM PP	37S-FM-PP-37Forcemain, 100mm38S-SS-S-38Sewermain, 150mm39S-FM-MH-39SMH A, 1.2m depth	HDPE 115 40		2015         80         77           2015         80         77           2015         40         37	\$450 \$500 \$8,000	\$51,750 \$20,000 \$8,000		1	34Inspect/assess forcemains for deterior determine replacement timing/phasi25		Included in \$60	0,000 5-10 Year 10+ Year
0         850         1070           7         850         1070		Lilmac rd. 0+188	1585-01 S	FM CO	40     S-FM-CO-40     Sewer cleanout		ea		\$3,000	\$3,000	Image: Second	1	2 2 5 4 C C C C C C C C C C C C C C C C C C			10+ Year
8         850         1070           8         850         1070		Shawnigan-Mill Bay Rd 0+160 - 0+770 Shawnigan-Mill Bay Rd 0+189			41 S-FM-PP-41 Forcemain, 100mm	HDPE 610	m ea		\$450 \$15,000	\$274,500 \$15,000		1	34Inspect/assess forcemains for deterior determine replacement timing/phasi25	UDEIAII	ns Included in \$60	0,000 5-10 Year 10+ Year
9 850 107	70 Waterman Road	Streamside pl. 6+000-6+150,11+360-11+426 (x2)	1585-01 S	FM PP	43         S-FM-PP-43         Forcemain, 75mm	SDR21 PVC 432	m	2011 80 73	\$425	\$183,600		1	3 4 Inspect/assess forcemains for deterior determine replacement timing/phasi	Unerall	ins Included in \$60	),000 <b>5-10 Year</b>
9         850         1070           10         850         1070		Streamside pl. 11+360 Waterman rd. 11+360-11+005	1585-01 S	FM PP	45 S-FM-PP-45 Forcemain, 75mm	DR11 HDPE 355	ea		\$15,000	\$30,000 \$150,875		1	2     5       3     4       Inspect/assess forcemains for deterior determine replacement timing/phasi		ns Included in \$60	),000 5-10 Year
11 850 1070	70 Waterman Road	BOURBAN ROAD		FM PP		8	m	2011 80 73	\$450	\$3,427		1	3 4 Inspect/assess forcemains for deterio determine replacement timing/phasi	ation to Operati	ns Included in \$60	0,000 <b>5-10 Year</b>
11 850 1070	70 Waterman Road	BOURBAN ROAD	S	SS S	47 S-SS-S-47 Sewermain, 150mm (GIS minus catalogued length from 121-22982-01)	PVC 299	m	80 46	\$500	\$149,374		2	2 4 Inspect/assess collection system for o to determine replacement timing/ph	eterioration	ons \$20,000	5-10 Year
12 850 107	70 Waterman Road	BRIARWOOD DRIVE		+ + +	48     S-FM-PP-48       Forcemain, 50mm (GIS minus catalogued length from 1585-01)	PVC 0	m	2011 80 73	\$400	\$0		1	3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi         3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi         3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi	ation to Operati	ons Included abo	ve 5-10 Year
	70 Waterman Road 70 Waterman Road	BRIARWOOD DRIVE	GIS S	FM PP FM PP	49       S-FM-PP-49       Forcemain, 50mm (GIS minus catalogued length from 1585-01)         50       S-FM-PP-50       Forcemain, 65mm (GIS minus catalogued length from 1585-01)	PE 0	m		\$400 \$425	\$0 \$0		1	determine replacement timing/phasi	g. ation to Operati		
12 850 1070	70 Waterman Road	BRIARWOOD DRIVE		1 1 1	51     S-FM-PP-51       Forcemain, 75mm (GIS minus catalogued length from 1585-01)	PVC 0	m	2011 80 73	\$425	\$0		1	Image: solution of the sector of the sect		ins Included abo	ve 5-10 Year
13 850 1070	70 Waterman Road	BUCKTAIL ROAD	S	SS S	52 S-SS-S-52 Sewermain 50mm	9	m	80 46	\$400	\$3,600		2	2 4 Inspect/assess collection system for c to determine replacement timing/ph		ins Included abo	ove 5-10 Year
14 850 1070	70 Waterman Road	LILMAC ROAD			53     S-FM-PP-53   Forcemain, 50mm	PE 177		2011 80 73	\$400	\$70,800		1	3     4     Inspect/assess forcemains for deterior determine replacement timing/phasi	g.	ns Included in \$60	0,000 <b>5-10 Year</b>
14 850 1070	70 Waterman Road	LILMAC ROAD	GIS	SS S	54 S-SS-S-54 Sewermain, 50mm	21	m	80 46	\$400	\$8,400		2	2 4 Inspect/assess collection system for a to determine replacement timing/ph		ons Included abo	ove 5-10 Year
15 850 1070	70 Waterman Road	MATTHEW PLACE	GIS		55 S-SS-S-55 Sewermain 150mm	PVC 110	m	1984 80 46	\$500	\$55,005		2	2 4 Inspect/assess collection system for a to determine replacement timing/ph	Unerati	ons Included abo	ove 5-10 Year
16 850 1070	70 Waterman Road				56         S-SS-S-56			1984 80 46	\$500	\$55,505		2	2 4 Inspect/assess collection system for o to determine replacement timing/ph	Unerati	ons Included abo	ove 5-10 Year
17 850 107	70 Waterman Road		GIS		Sewermain, 150mm	PVC 111		2011 80 73	\$400	\$400		1	Inspect/assess forcemains for deterio	ation to Operati	ns Included in \$60	0,000 5-10 Year
	70 Waterman Road	SHAWNIGAN-MILL BAY ROAD						2011 80 73	\$450	\$84,150		1	determine replacement timing/phasi       3     4       Inspect/assess forcemains for deterior determine replacement timing/phasi	ation to		0,000 <b>5-10 Year</b>
19 850 1070	70 Waterman Road	STREAMSIDE PLACE				PVC 148		2011 80 73	\$425	\$62,964		1	3 4 Inspect/assess forcemains for deterior determine replacement timing/phasi	ation to g. Operati	ins Included in \$60	J,000 5-10 Year
19 850 1070	70 Waterman Road	STREAMSIDE PLACE	GIS		60 S-FM-PP-60 Forcemain, 75mm	PE 38		2011 80 73	\$425	\$16,150		1	3 4 Inspect/assess forcemains for deterior determine replacement timing/phasi	ation to Operati	ns Included in \$60	0,000 5-10 Year
20 850 107	70 Waterman Road	WADE PLACE	GIS		61 S-SS-S-61 Sewermain, 150mm	PVC 98		80 46	\$500	\$48,953		2	2 4 Inspect/assess collection system for a to determine replacement timing/ph	Unerati	ins Included abo	ove 5-10 Year
	70 Waterman Road	WATERMAN ROAD	GIS	FM PP	62     S-FM-PP-62       Forcemain, 50mm	PVC 46	m	2011 80 73	\$400	\$18,575		1	3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi         3       4       Inspect/assess forcemains for deterior determine replacement timing/phasi	g.		
	70 Waterman Road 70 Waterman Road	WATERMAN ROAD WATERMAN ROAD	GIS		64 S-FM-PP-64 Forcemain, 75mm	CPV         8           PVC         35	m	2011         80         73           2011         80         73	\$425 \$425	\$3,400 \$15,071		1	3     4     determine replacement timing/phasi       3     4     Inspect/assess forcemains for deterior determine replacement timing/phasi	g. Operati ation to Operati g.		
	70 Waterman Road 70 Waterman Road	WATERMAN ROAD	GIS	FM PP	65 S-FM-PP-65 Forcemain, 75mm (GIS minus catalogued length from 1581-01)	PE 399	m	2011         80         73           2011         80         73	\$425 \$425	\$169,575 \$11,900		1	3     4     Inspect/assess forcemains for deterior determine replacement timing/phasi       3     4     Inspect/assess forcemains for deterior determine replacement timing/phasi	ation to Operati g. Operati		
21 850 107	70 Waterman Road	WATERMAN ROAD WATERMAN ROAD	GIS S	FM PP	67     S-FM-PP-67   Forcemain, 100mm	CPV 28	m	2011 80 73	\$450	\$450		1	determine replacement timing/phasi       3     4       Inspect/assess forcemains for deterior       determine replacement timing/phasi	g. Operati ation to Operati g. Operati	ins Included in \$60	0,000 5-10 Year
	70 Waterman Road 70 Waterman Road	WATERMAN ROAD	GIS S	FM PP	68 S-FM-PP-68	PVC 13	m	2011         80         73           1984         80         46	\$500 \$500	\$6,290 \$224,613		1	3     4     Inspect/assess forcemains for deterior determine replacement timing/phasi       2     4     Inspect/assess collection system for or determine replacement timing/phasi	g. Operation Operation		0,000 <b>5-10 Year</b>
	70 Waterman Road 70 Waterman Road	WATERMAN ROAD WATERMAN ROAD	GIS S	FM PP	70     S-FM-PP-70   Forcemain, unknown diameter, assumed 100mm	PVC         449           PVC         6		1984     80     46       2011     80     73	\$500	\$224,613		1	2     4     to determine replacement timing/ph       3     4     Inspect/assess forcemains for deterior determine replacement timing/phasi	ation to Operati		
22 850 107	70 Waterman Road	Entire system					ea	1984 40 6	\$3,000	\$300,000		2	2 4 Inspect/assess collection system for c	eterioration Operati	ons Included abo	ve 5-10 Year
	70 Waterman Road	Entire system					ea		\$8,000	\$88,000		2	2     4     Inspect/assess collection system for c to determine replacement timing/ph	eterioration		ove 5-10 Year
22 850 1070	70 Waterman Road	Entire system	GIS S		73 S-SS-CO-73 Sewer Cleanouts (GIS minus record drawings)	9	еа	1984 40 6	\$3,000	\$27,000		2	2 4 Inspect/assess collection system for o to determine replacement timing/ph	eterioration Operati	ons Included abo	ove 5-10 Year
22 850 107	70 Waterman Road	Entire system	GIS S		74     S-STP-DF-74     Disposal field building	2	ea		\$20,000	\$40,000		2	2 4 Inspect/assess collection system for a to determine replacement timing/ph	eterioration Operati	ins Included abo	ve 5-10 Year
22         850         107           22         850         107	70 Waterman Road 70 Waterman Road 70 Waterman Road	Entire system Entire system Entire system	GIS S GIS S GIS S	STP     STP       STP     DF       LS     BLD	75S-STP-STP-75Treatment building sewer discharge (Unsure what these items refer to, may be captured in other line items)76S-STP-DF-76Disposal field discharge (Unsure what these items refer to, may be captured in other line items)77S-LS-BLD-77Lift station building (Review GIS data for accuracy)78S-STP-STP-78STP building (Review GIS data for accuracy)	0           0           0           0           0           0	ea e	1984     40     6       1984     40     6       1984     40     6       1984     40     6	\$5,000 \$5,000 \$200,000	\$0 \$0 \$0						
22 850 1070	70 Waterman Road	Entire system	GISSS	STP STP	78     S-STP-STP-78       78     STP building (Review GIS data for accuracy)	0	ea	1984 40 6	\$200,000	\$0						



850 Kerry Village Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

850 (1)



**850 (2)** 1 of 23



850 Kerry Village Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

850 (3)



**<sup>850 (4)</sup>** 2 of 23

IELD INSPECTION		
system: Korry Village Sever system 850 INSPECTED BY: 1) Site Conditions 2) Building Conditions	_ DATE: PROJECT No.: CVRD STAFF PRESENT:	<u>No 22//7</u> 5170700
<u>Condition of wet well:</u> Visible Deterioration of structure and hatch:		

850 Kerry Village Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

850 (5)



**850 (6)** 3 of 23



850 (7)



**850 (8)** 4 of 23



850 (9)



**850 (10)** 5 of 23



850 (11)



**850 (12)** 6 of 23



850 (13)



**850 (14)** 7 of 23



850 (15)



**850 (16)** 8 of 23



850 (17)



**850 (18)** 9 of 23



850 (19)



**850 (20)** 10 of 23 850 Kerry Village Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

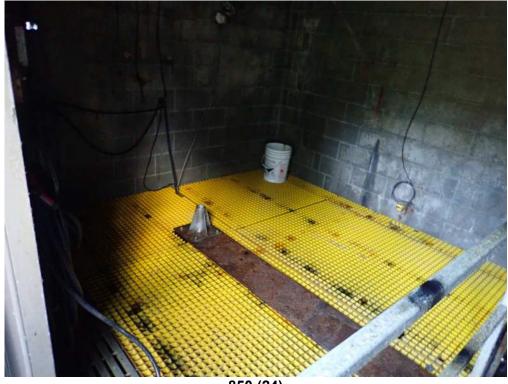
850 (21)



**850 (22)** 11 of 23



850 (23)



**850 (24)** 12 of 23



850 (25)



**850 (26)** 13 of 23



850 (27)



**850 (28)** 14 of 23

850 (29)



**850 (30)** 15 of 23



850 (31)



**850 (32)** 16 of 23



850 (33)



**850 (34)** 17 of 23



850 (35)

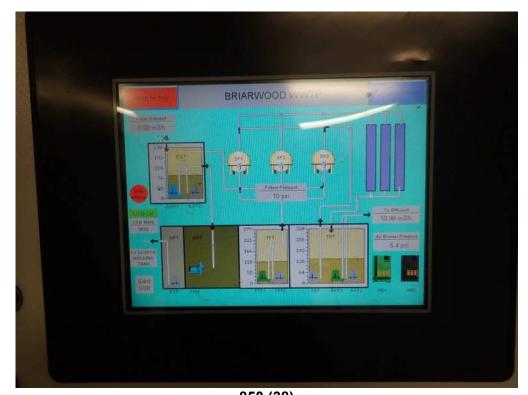


**<sup>850 (36)</sup>** 18 of 23

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850 Kerry Village Sewer-See Infrastructure Condition Assessment table with corresponding photo ID's

850 (37)



**850 (38)** 19 of 23



850 (39)

1	
IFT STATION	MORRISON HERSHFIELD
SYSTEM: Korry Village SYSTEM 850	
NSPECTED Adam	CVRD STAFF Told.
) <u>Site Conditions</u> Fined in school	
) Building Conditions	
an of structure and	hatch:
	950 (40)

**850 (40)** 20 of 23



850 (41)



**850 (42)** 21 of 23



850 (43)



**850 (44)** 22 of 23



850 (45)



**850 (46)** 23 of 23

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Kerry Village - Lift Station - Functional Code 850

			dn		<u> </u>	CO	MPONENT		CONDITION ASSESSMEN	т						LIFECYCLE DATA		RECOMMENDAT	TION			If recommended						OPINION OF	PROBABLE	соѕт		
BLDG Name	BLDG Type	Function Code	Level 1 Major Gro Elements	Level 2 Group Elements	Level 3 Individu: Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead o a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Kerry Village - Lift Station	Lift i Station	350 A Si	ubstructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cask-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.		5	2014	21-Nov-17	МН	4	50	46	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$20	SF	\$2,000	0%	5%	5%	\$3,000
Kerry Village - Lift Station	Lift Station	850 A Si	ubstructure	A10 Foundations	A1030 Slab on Grade	e A103001 Standard Slab on Grade	Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5	2014	21-Nov-17	МН	4	50	46	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this litem are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$10	SF	\$1,000	0%	5%	5%	\$2,000
Kerry Village - Lift Station	Lift Station	850 B Sł	hell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of masonry blocks with a woof framed root. Some efforescence was noted on the interior; however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural diamage.		5	2014	21-Nov-17	MH	4	50	46	Masonry structural components are expected to last the life of the building. A contingency budge has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.		3 - Future Renewal	Yes	Yes	Yes	Νο	1	\$2,000	EA	\$2,000	0%	10%	5%	\$3,000
Kerry Village - Lift Station	Lift I Station	850 B SI	hell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ General Superstructure	1 1	The superstructure is comprised of masonry blocks with a woof framed roof. Some efflorescence was noted on the interior; however, MH understands that no active leaks are present. The masonry blocks have been painted.	4	4	2014	21-Nov-17	МН	4	12	8	Repaint masonry blocks. Re	tepair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA	\$2,000	0%	10%	5%	\$3,000
Kerry Village - Lift Station	Lift 1 Station	850 B SI	hell	B20 Exterior Enclosure	B2010 Exterior Wall	s B201001 Exterior Enclosure	Exterior Walls/Wood Elements	1	Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.	4	4	2014	21-Nov-17	MH	4	12	8	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA	\$1,500	0%	10%	5%	\$2,000
Kerry Village - Lift Station	Lift a Station	850 B Sł	hell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	A painted metal door (double door) is present on the building.	4	4	2014	21-Nov-17	MH	4	30	26	Replace doors at the end of their service life.		3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA	\$1,500	0%	5%	5%	\$2,000
Kerry Village - Lift Station	Lift Station	850 B SI	hell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	1	The roof is sloped assembly which has been waterproofed with a metal roof assembly. The roof is edge drained.	4	4	2014	21-Nov-17	МН	4	30	26	Replace metal roofing at the end of its service life. Ongoing mintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	No	Yes	No	No	110	\$30	SF	\$3,300	0%	5%	5%	\$4,000
Kerry Village - Lift Station	Lift i Station	350 C In	nteriors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	4	4	2014	21-Nov-17	МН	4	20	16	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

page	1	of	1	

Cowichan Valley Regional District
Facility Condition Assessment and Capital Plan
Kerry Village - Lift Station - Functional Code 850

			\$	ents	-	c	OMPONENT	CONDITION ASSESSME	νT				LIF	IFECYCLE DATA		RECOMMEN	DATION			If recommender	đ				OPIN	IION OF PR	OBABLE O	OST			10-YEAR CAPITAL PLAN
	BLDG Type	Function Code	Level 1 Major Gro	Level 2 Group Elem	Level 3 Individua	Cleanerts	Location / Type	Photo Description & History	Condition	Performance Yr New or Last	Major Action Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval Est. Time	Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	work not complete can th rate of deterioration be expected to increase ?	this system lead	condition adversely affect	anti	Unit Rate	Unit Subtotal	kepair or Replacement Cost	Consult.	Contin- gency	5% Tax	Total in 2017 Dollars	2018         2019         2020         2021         2022         2023         2024         2025         2026         2027           50         52,000         50         54,000         50         50         51,000
Kerry Villaj Station	- Lift Lift Statio	850 on	A Substructure	A10 Foundations	A1010 Star Foundation		Underground/ Foundations	1 The foundation is comprised of cast-in-place concrete foorings with concrete fooringtion values. The foundation is inconceiled from review, with the exception of some above-grade foundation wall on some elevations.		5 20	14 21-Nov-17	мн	4	50	46	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$20	SF \$2,	000	0%	5%	5% S	3,000	
Kerry Villa Station	- Lift Lift Statio		A Substructure	A10 Foundations	A1030 Slat	on Grade A103001 Standard Si on Grade	ib Interior of Building At-Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade. Isolated hairline cracking wa observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	\$ 5	5 20	14 21-Nov-17	мн	4	50		The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	100	\$10	SF \$1,	000	0%	5%	5% \$	2,000	
Kerry Villaj Station	- Lift Lift Statio	850 on	B Shell	810 Superstructure	e B10 Super	tructure 810 Superstructure	Interior of Building/ General Superstructure	<ol> <li>The superstructure is comprised of masory block with a word framed colo. Some effore-cares was noted on the interior; however, MH understands that no active leaks are present.</li> <li>No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long term leakage that would allode to concelled structural damage.</li> </ol>		5 20	14 21-Nov-17	мн	4	50	46	Masonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	Repair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA \$2,	000	0%	10%	5% \$	3,000	
Kerry Villaj Station	- Lift Lift Statio	850 on	B Shell	B10 Superstructure	e B10 Super	tructure B10 Superstructure	Interior of Building/ General Superstructure	<ol> <li>The superstructure is comprised of masonry blocks with a woof framed roof. Some efflorescence was noted on the interior; however, MH understands that no active leaks are present.</li> <li>The masonry blocks have been painted.</li> </ol>	4	4 20	14 21-Nov-17	мн	4	12	8	Repaint masonry blocks.	Repair Allowance	3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000	EA \$2,	000	0%	10%	5% \$	3,000	
Kerry Villa Station	Lift Lift Statio	850 m	B Shell	B20 Exterior Enclosure	B2010 Exte	rior Walls B201001 Exterior Enclosure	Exterior Walls/Wood Elements	<ol> <li>Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.</li> </ol>	4	4 20	14 21-Nov-17	мн	4	12	8	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA \$1,	500	0%	10%	5% \$	2,000	\$2,000
Kerry Villa Station	- Lift Lift Statio	850 an	B Shell	B20 Enclosure	E2030 Exte	rior Doors B203001 Solid Doors	Exterior Walls/ Door	<ol> <li>A painted metal door (double door) is present on the building.</li> </ol>	4	4 20	14 21-Nov-17	MH	4	30	26	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500	EA \$1,	500	0%	5%	5% \$	2,000	54.000
Kerry Villaj Station	- Lift Lift Statio	850 on	B Shell	D30 Roofing	B3010 Roo Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	<ol> <li>The roof is sloged assembly which has been waterproofed with a metal roof assembly.</li> <li>The roof is edge drained.</li> </ol>					4	30	26	Replace metal roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	No	Yes	No	No	110	\$30	SF \$3,	300	0%	5%	5% \$	4,000	
Kerry Villaj Station	- Lift Lift Statio	850 on	C Interiors	D50 Electrical	D5020 Ligh Branch Wi	ing and D502002 Lighting ing Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	4	4 20	14 21-Nov-17	мн	4	20	16	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS \$2	00	0%	0%	5% \$	1,000	\$1,000



Cowichan Valley Regional District

Kerry Village - Lift Station - Functional Code 850

Photo 1



Photo 2

### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Kerry Village - Water Treatment Building - Functional Code 850

		dno		e.	co	OMPONENT		CONDITION ASSESSMENT	ſ					u	IFECYCLE DA	ТА	RECOMMEND	ATION			If recommended work not		Can the current				OPINION OF	PROBABLE C	OST		
BLDG Name BLDG Name	Function Cod	Level 1 Major Gr Elements	Level 2 Grour Elements	Level 3 Individ Elements	ID	Location / Type	Photo	Description & History	Condition	Performance	Yr New or Last Major Action	Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation	Type	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead to a loss of use of the facility ?	condition	Quantity	Unit Rate	Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency	5% Tax	Total in 2017 Dollars
Kerry Village - Water Treatment Building Building	850 nt	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.	5	5	2010 23	1-Nov-17	MH	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	600	\$20	SF	\$12,000	0%	5%	5%	\$14,000
Kerry Village - Water Treatment Building Building	850 nt	A Substructure	A10 Foundations	A1030 Slab on Gra	ide A103001 Standard Sla on Grade	ab Interior of Building At- Grade/ Slab-on-Grade	1	The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5	5	2010 2:	1-Nov-17	MH	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	600	\$10	SF	\$6,000	0%	5%	5%	\$7,000
Kerry Village - Water Treatment Building Building		A Substructure	A10 Foundations		de A103006 Foundation Drainage	Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5		2010 2:			8	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500	LS	\$500	0%	0%	5%	\$1,000
Kerry Village - Water Water Treatment Building Treatmer Building	850 nt	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains	1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5	5	2010 2:	1-Nov-17	MH	8	50	42	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No								
Kerry Village - Water Treatment Building Building		B Shell	B10 Superstructure	B10 Superstructur	e B10 Superstructure	Interior of Building/ General Superstructure	1	The superstructure is comprised of wood framing on all four walls and roof trusses, supported on a cast-in-place concrete foundation. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5	5	2010 2:	1-Nov-17	MH	8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	600	\$40	SF	\$24,000	0%	5%	5%	\$27,000
Kerry Village - Water Water Treatment Building Treatmen Building		B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	s 1	Painted cementitious siding and wood trim are present on the exterior walls.	4	4	2010 23	1-Nov-17	МН	8	12	7	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	550	\$7	SF	\$3,850	0%	15%	5%	\$5,000
Kerry Village - Water Treatment Building Building		B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	alls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	5 1	Painted cementitious siding and wood trim are present on the exterior walls.	5	5	2010 2:	1-Nov-17	MH	8	50	42	The cementitious siding is expected to last the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	550	\$35	SF	\$19,250	0%	5%	5%	\$22,000
Kerry Village - Water Treatment Building Building	850 nt	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5	5	2010 2:	1-Nov-17	МН	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$20	SF	\$2,000	0%	10%	5%	\$3,000
Kerry Village - Water Treatment Building Building	850 nt	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors	Exterior Walls/ Door	1	A painted metal door (double swing) is present on the building.	5	5	2010 2:	1-Nov-17	MH	8	30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$1,500	EA	\$3,000	0%	5%	5%	\$4,000
Kerry Village - Water Treatment Building Building	850 nt	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is a sloped assembly with asphalt shingles installed. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5	5	2010 2:	1-Nov-17	МН	8	25	17	Replace the roof assembly at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	650	\$30	SF	\$19,500	0%	5%	5%	\$22,000
Kerry Village - Water Water Treatment Building Building	850 nt	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	1	The roof is a sloped assembly with asphalt shingles installed. The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.	5	5	2010 2:	1-Nov-17	MH	8	25	17	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	60	\$10	SF	\$600	0%	10%	5%	\$1,000
Kerry Village - Water Treatment Building Building	850 nt	C Interiors	C30 Interior Finishe	s C3010 Wall Finishe	es C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2	The interior gypsum and plywood walls and ceilings are painted.	5	5	2010 2:	1-Nov-17	МН	8	20	12	Repaint interiors as required. Note: a long service life has been included to reflect to building usage.	Repair Allowance	3 - Future Renewal	Yes	Yes	No	No	1	\$2,500	LS	\$2,500	0%	0%	5%	\$3,000
Kerry Village - Water Water Treatment Building Treatmer Building		C Interiors	D50 Electrical	D5020 Lighting an Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment		An exterior light is present on the building near the entrance.	5	5	2010 2:	1-Nov-17	мн	8	20	12	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200	LS	\$200	0%	0%	5%	\$1,000

### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Kerry Village - Water Treatment Building - Functional Code 850

			đ	ints	_		OMPONENT	CONDITION ASSESSMENT					LIFECYCLE DA	TA	RECOMMEN	DATION		lfre	commended					OPINIC	N OF PROB	ABLE COST			10-YEAR CAPITA	L PLAN		 	
BLDG Name	BLDG Type	Function Code	evel 1 Major Grou Elements	vel 2 Group Eleme	Level 3 Individual Elements	iD	ad AL	Photo Description & History	Condition	r New or Last Major Action	sessment Date	Age in 2018	Typical Life Cycle or Action Inter val	Est. Time maining to EOL r Major Action	Recommendation	Type	Priority	Can this work be com phased over multiple years ? det e	work not plete can the rate of erioration be xpected to processe ?	Will a failure in this system lead o a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate	Subtotal Repair or	Consult.	ontin- gency	5% Tax	Total in 2017 Dollars	2018 2019 \$0 \$1,00	9 2020	2021 2022 \$0 \$0		2025 2026 2027 50 50 50
erry Village - Water W eatment Building Tr Bu	Vater 8 reatment uilding	850 4	A Substructure	년 A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	그 Underground/ Foundations	<ol> <li>The foundation is comprised of cast-in-place concrete footing: with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations.</li> </ol>	5 5	2010 2	21-Nov-17 MH	8	50	2 5 42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	600	\$20 5	F \$12,00	0 0%	6 5%	5%	\$14,000					
erry Village - Water W. eatment Building Bu Bu	Vater 8 reatment uilding	850 A	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103001 Standard Sla on Grade	b Interior of Building At-Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade (polished concrete throughout). Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	5 5	2010 2	21-Nov-17 MH	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	600	\$10 5	F \$6,00	0%	6 5%	5%	\$7,000					
erry Village - Water W. eatment Building Tr Bu	Vater 8 reatment uilding	850 4	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/ Perimeter Drains	<ol> <li>Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.</li> </ol>	5 5	2010 2	21-Nov-17 MH	8	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500 1	\$ \$500	0%	6 0%	5%	\$1,000	\$1,00	0			
erry Village - Water W eatment Building Tn Bu	Vater 8 reatment uilding	850 Å	A Substructure	A10 Foundations	A1030 Slab on Gra	de A103006 Foundation Drainage	Underground/Perimeter Drains	Permeter drain pipes are assumed to be installed at the footing level. No insur-instant to fourballion draining even credited by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2010 2	21-Nov-17 MH	8	50	42	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: This should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No												
erry Village - Water W. eatment Building Tr Bu	Vater 8 reatment uilding	850 E	B Shell	B10 Superstructu	re B10 Superstructur	e B10 Superstructure	Interior of Building/ General Superstructure	The superstructure is comprised of wood framing on all four walls and roof trustes, supported on a cask-in-place concrete foundation.     No settlement or other evidence of structural distress was observed our content. There was networker or proport to long- term leakage that would allude to concealed structural damage.	5 5	2010 2	21-Nov-17 MH	8	50	42	Interior protected structural components are expected to last the life of the building. No major capital expenditures are expected to be required.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	600	\$40 \$	F \$24,00	0 0%	6 5%	5%	\$27,000					
erry Village - Water W eatment Building Tr Bu	/ater 8 reatment uilding	850 E	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	IIs B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted cementitious siding and wood trim are present on the exterior walls.</li> </ol>	4 4	2010 2	21-Nov-17 MH	8	12	7	Repaint siding and trim. At the time of painting, replace sealant joints and wood trim as required.	Repair Allowance	e 3 - Future Renewal	Yes	Yes	No	No	550	\$7 5	F \$3,85I	0%	6 15%	5%	\$5,000				\$5,000	
erry Village - Water W. eatment Building Tr Bu	Vater 8 reatment uilding	850 E	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Cementitious Siding	<ol> <li>Painted cementitious siding and wood trim are present on the exterior walk.</li> </ol>	5 5	2010 2	21-Nov-17 MH	8	50	42	The cementitious siding is expected to las the life of the building. Note: isolated sealant and wood trim replacement should be completed as part of the ongoing painting.	Replacement	3 - Future Renewal	Yes	Yes	No	No	550	\$35	F \$19,25	0 0%	6 5%	5%	\$22,000					
erry Village - Water W. eatment Building Tro Bu	Vater 8 reatment uilding	850 E	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	5 5	2010 2	21-Nov-17 MH	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal	Yes	Yes	No	No	100	\$20 5	F \$2,00	0%	6 10%	5%	\$3,000					
erry Village - Water W. eatment Building Tr Bu	Vater 8 reatment uilding	850 E	B Shell	B20 Enclosure	E2030 Exterior Do	ors B203001 Solid Doors	Exterior Walls/ Door	<ol> <li>A painted metal door (double swing) is present on the building.</li> </ol>	5 5	2010 2	21-Nov-17 MH	8	30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	2	\$1,500 E	A \$3,00	0%	6 5%	5%	\$4,000					
	reatment uilding	850 E	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is a sloped assembly with asphalt shingles installed.</li> <li>The roof drains via aluminum gatters to rain water leaders that drain into below grade piping.</li> </ol>	5 5		21-Nov-17 MH	8	25	17	Replace the roof assembly at the end of its service life. Ongoing maintenance of the roof should include review of all exposed fasteners and resealing of penetrations.	Replacement	3 - Future Renewal	No	Yes	No	No	650	\$30 5	F \$19,50	0 0%	6 5%	5%	\$22,000					
	uilding	850 E	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is a sloped assembly with asphalt shingles installed.</li> <li>The roof drains via aluminum gutters to rain water leaders that drain into below grade piping.</li> </ol>	5 5		21-Nov-17 MH		25	17	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	60	\$10 5	F \$600	0%	6 10%	5%	\$1,000					
erry Village - Water W eatment Building Tr Bu	Vater 8 reatment uilding	850 0	C Interiors	C30 Interior Finish	tes C3010 Wall Finishe	s C301003 Gypsum Wallboard Finishes	Interior/Interior Finishes	2 The interior gypum and plywood walls and ceilings are painted.	5 5	2010 2	21-Nov-17 MH	8	20	12	Repaint interiors as required. Note: a long service life has been includer to reflect to building usage.	Repair Allowance	e 3 - Future Renewal	Yes	Yes	No	No	1	\$2,500	\$\$\$2,50	0%	6 0%	5%	\$3,000					
erry Village - Water W eatment Building Tri Bu	Vater 8 reatment uilding	850 0	C Interiors	DS0 Electrical	D5020 Lighting and Branch Wiring	d D502002 Lighting Equipment	Exterior Lighting Equipment	An exterior light is present on the building near the entrance.	5 5	2010 2	21-Nov-17 MH	8	20	12	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 1	s \$200	0%	6 0%	5%	\$1,000					



Photo 1



Photo 2

### 914

Cowichan Valley Regional District



July 18, 2018

**Date Prepared** 

## 860 - Youbou Sewer

Infrastructure Condition Assessment and Capital Plan 9385 Youbou Road, Youbou, BC

### PROPERTY STATISTICS AND REPORT SUMMARY

System Replacement Cost Estimate	\$1,578,535	
Number of Users	43	
Replacement Cost Per User	\$36,710	
Annual Replacement Cost (40 Years)	\$14,366	per year
Annual Replacement Cost (80 Years)	\$19,488	per year
10 Year Capital Plan Total	\$10,000	
10 Year Operations and Maintenance Plan Total	\$30,000	

### **PROPERTY DESCRIPTION**

The Youbou Sewer System started construction in 2005 and includes the phases outlined in the table below.

Development	Year Installed	Source
Collection System	2005	CVRD Input
Wastewater Treatment Plant	2005	CVRD Input

### **PROJECT TEAM**

Austin Tokarek, Asset Coordinator Todd Etherington, Utility Operations Superintendent David Parker, Engineering Technologist III Rob Grant, GIS Supervisor Andrea Kross, GIS Technician I Adam Greenwood, Project Engineer Kieran Bertsch, E.I.T. Caleb Light, GIS

### **CONTACT INFORMATION**

atokarek@cvrd.bc.ca tetherington@cvrd.bc.ca dparker@cvrd.bc.ca rgrant@cvrd.bc.ca akross@cvrd.bc.ca agreenwood@morrisonhershfield.com kbertsch@morrisonhershfield.com clight@morrisonhershfield.com



# 860 - Youbou Sewer

### Infrastructure Condition Assessment and Capital Plan 9385 Youbou Road, Youbou, BC

Date Prepared

July 18, 2018

Contact	Comment
Adam Greenwood and Kieran Bertsch	The visual reviews were completed on November 21-24, 2017 by Adam Greenwood and Kieran Bertsch of MH. During our review of the systems we were accompanied by Mr. Todd Etherington and Mr. David Parker, who provided access to each system.
Caleb Light	Rob Grant and Andrea Kross from CVRD provided the geodatabase to MH. Caleb Light from MH tabulated the length of infrastructure in the developed area of the system from the database. The GIS items are the difference between the record drawings and the length of infrastructure tabulated in the geodatabase.
Adam Greenwood and Kieran Bertsch	Draft inventory assessment was issued to CVRD for review.
Adam Greenwood and Kieran Bertsch	Updated draft inventory assessment was issued to CVRD for review.
Adam Greenwood and Kieran Bertsch	Updated inventory assessment was issued to CVRD during the March 27, 2018 review meeting. Updates included the following tasks: 1) Reorganize linear assets based on street names 2) Complete building asset management seperately (to be completed by Chris Raudoy) 3) Include disclaimer on cost estimates 4) Create seperate tables for O&M tasks and Capital Plans and update actions to Operations, Maintenance, Capital Renewal and Capital Upgrade/New
	Adam Greenwood         and Kieran Bertsch         Caleb Light         Adam Greenwood         and Kieran Bertsch         Adam Greenwood



Date Prepared July 18, 2018

# **10 Year Capital Plan and Operations and Maintenance Plan**

The Capital Plan and Operations and Maintenance Plan outlined below are based on the findings of the initial condition assessment. The tasks identified in these plans should be completed within the next 10 years to inform the necessary infrastructure maintainance, rehabilitation and replacement work to maintain the appropriate level of service for the users of the system. The findings of the initial condition assessment should be reviewed by the CVRD to ensure they reflect the current condition of the system.

# Table 1: 10 Year Capital Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
Critical	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 (64))	3						
	4						
Important (1 - 2 Year)	5						\$0
(1-2168)	6						
Short Term	7	1	S-STP-COM-9		Upgrade PLC to CVRD spec in wastewater treatment plant (scheduled).	\$10,000	¢10.000
(2 - 5 Year)	8						\$10,000
	9						
	10						
Medium Term (5 - 10 Year)	11						\$0
(5 - 10 fear)	12						
						Total	\$10,000

# Table 2: 10 Year Operations and Maintenance Plan - DRAFT

Timing	Item	Asset ID	Asset Code	Type of Work	Recommendation Description	Value	Total
	1						
Critical (0 - 1 Year)	2						\$0
(0 - 1 (61)	3						
Important	4						
(1 - 2 Year)	5						\$0
(1 2 1001)	6						
	7						
	8						
Short Term	9						\$0
(2 - 5 Year)	10						
	11 12						
	12				Inspect/assess the wastewater treatment plant, gravity drum filter,		
	13	1	ALL	Operations	UV units, process piping, generator, Orenco treatment cells, and equalization tank.	\$15,000	
Medium Term (5 - 10 Year)	14	2 to 4	ALL	Operations	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	\$15,000	\$30,000
	15						
	16						
	17						
						Total	\$30,000

**Disclaimer**: Cost estimates listed above are based on limited information and should only be considered as order of magnitude costs. Further assessment and design is required to improve the accuracy of these estimates.

Owner: System: Civic Address: Geographic Location	860 9385 Youbou						Infrastructure Condition Assessment								Á. 570 505	7							
Customers:	Parcels: Users:	78 43										Current Year	2018	Total Replacement Value Value per user	\$1,578,535 \$36,710								
Asset ID		Location			Asset Co	le				Asset Inventory							Condition	Assessment		Recommendations / Action Items		10 Year Capital Plan	
	Function Co	Code Address	Location	DWG Ref	Major Minor Spec ID	Asset Code	Photo Description	Make Model	Material Quantity	Quantity Unit	Year Installed Year Rene	wed Service Life Expectancy I	Est. Remaining Service	Life Unit Price	Replacement Value of Asset	Physical Condition			Severity of Failure Conditi		Type of Work	Replacement Cost	Timing Comment/Question to be resolved
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP STP 1	S-STP-STP-1 3	8, 6 to 15, 19 Sewage treatment plant building c/w access road and gate		1	ea	2005	40	27	Refer to Youbou Sewer System Building Condition Assessment.								Refer to Youbou Sewer System Building Condition Assessment.	
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP FTR 2	S-STP-FTR-2	6, 7, 10, 11 Gravity drum filter		2	еа	2005	20	7	\$50,000	\$100,000	Good Me	eets standard	2	2 4	Inspect/assess the wastewater treatment plant, gravity drum filter, UV units, process piping, generator, Orenco treatment cells, and equalization tank.	Operations	\$15,000	5-10 Year
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP UV 4	S-STP-UV-4	6, 8 UV disinfection unit		1	еа	2005	20	7	\$15,000	\$15,000	Good	eets standard	2	2 4	Inspect/assess the UV unit for deterioration to determine replacement timing/phasing	Operations	Included above	5-10 Year
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP PP 5	S-STP-PP-5	6, to 8 Process piping c/w valves, pipes, tees		1	LS	2005	40	27	\$60,000	\$60,000	Good	eets standard	2	2 4	Inspect/assess the process piping for deterioration to determine replacement timing/phasing	Operations	Included above	5-10 Year
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP GEN 6	S-STP-GEN-6	3, 4 Generator, 60 kW (STP)	Katolight SP series	1	ea	2005	40	27	\$60,000	\$60,000	Good	eets standard	2	2 4	Inspect/assess thegenerator for deterioration to determine replacement timing/phasing	Operations	Included above	5-10 Year
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos		S-STP-DF-7	5, 17, 18 Orenco treatment cells		1	LS	2005	20	7	\$150,000	\$150,000			2	2 4	Inspect/assess the Orenco treatment cells for deterioration to determine replacement timing/phasing	Operations	Included above	5-10 Year
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP ET 8	S-STP-ET-8	3, 16 Equalization tank		1	ea	2005	40	27	\$100,000	\$100,000			2	2 4	Inspect/assess the equalization tank for deterioration to determine replacement timing/phasing	Operations	Included above	5-10 Year
1	860	9385 Youbou Rd.	Sewage treatment plant	Site visit / Photos	S STP COM 9	S-STP-COM-9	12 to 15 Communications (STP)		1	LS	2005	10	0	\$20,000	\$20,000	Fair - dial in, intrusion alarm Do	es not meet standard	3	2 3	Upgrade PLC to CVRD spec in wastewater treatment plant (scheduled).	Capital Upgrade/New	\$10,000	2-5 Year
2	860	9385 Youbou Rd.	Creekside Drive	182-10-00	S FM PP 9	S-FM-PP-9	Forcemain, 50mm (1+077 - 1+265, 3+086 - 3+135)		237	m	2005	80	67	\$400	\$94,800			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	\$15,000	5-10 Year
2	860	9385 Youbou Rd.	Creekside Drive	182-10-00	S FM PP 10	S-FM-PP-10	Forcemain, 75mm (1+265 - 2+111, 2+622 - 3+086)		1310	m	2005	80	67	\$425	\$556,750			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	Included above	5-10 Year
2	860	9385 Youbou Rd.	Creekside Drive	182-10-00	S FM PP 11	S-FM-PP-11	Forcemain, 100mm (2+111 - 2+622)		511	m	2005	80	67	\$450	\$229,950			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	Included above	5-10 Year
3	860	9385 Youbou Rd.	CREEKSIDE DRIVE	GIS	S FM PP 12	S-FM-PP-12	Forcemain, 50mm (GIS minus catalogued length from 182-10)		15	m	2005	80	67	\$400	\$5,834			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	Included above	5-10 Year
3	860	9385 Youbou Rd.	CREEKSIDE DRIVE	GIS	S FM PP 13	S-FM-PP-13	Forcemain, 75mm (GIS minus catalogued length from 182-10)		0	m	2005	80	67	\$425	\$0			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	Included above	5-10 Year
3	860	9385 Youbou Rd.	CREEKSIDE DRIVE	GIS	S FM PP 14	S-FM-PP-14	Forcemain, 100mm (GIS minus catalogued length from 182-10)		2	m	2005	80	67	\$450	\$775			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	Included above	5-10 Year
4	860	9385 Youbou Rd.	YOUBOU ROAD	GIS	S FM PP 15	S-FM-PP-15	Forcemain, 100mm (includes 174m of unknown diameter)		225	m	2005	80	67	\$450	\$101,426			1	3 4	Inspect/assess the condition of the forcemain for deterioration to determine replacement phasing/timing.	Operations	Included above	5-10 Year
5	860		Entire system	GIS	S SS MH 16	S-SS-MH-16	Sewer manholes		1	еа	2005	40	27	\$8,000	\$8,000			1	2 5				10+ Year
5	860	9385 Youbou Rd. 9385 Youbou Rd.	Entire system	GIS	S SS CO 17	S-SS-CO-17	Sewer Cleanouts		12	ea	2005	40	27	\$3,000	\$36,000 \$40.000			1	2 5				10+ Year
5	860 860	9385 Youbou Rd. 9385 Youbou Rd.	Entire system Entire system	GIS	S STP DF 18	S-STP-DF-18 S-LS-BLD-19	Disposal field buildings Pump station buildings (Update GIS information)		0	ea	2005	<u>4</u> 0 ΔΩ	27	\$20,000	<u></u> \$40,000 ¢ດ	+			2 5				TO+ Jean
5	860	9385 Youbou Rd.	Entire system	GIS	S         STP         STP         20		STP building (Update GIS information)		0	ea	2005	40	27	\$100,000	\$0								

SEWAGE TREATMENT PLANT FIELD INSPECTION	MORRISON HERSHFIELD
SYSTEM: Youbou Scuer	DATE: Nov. 21/17
SYSTEM SGO	PROJECT No.: 5170700
INSPECTED BY:	CVRD STAFF PRESENT:
1) Type of Treatment System (Schematic) - Just	services creekside.
2) Site Conditions/Security	

860 (1)





860 (3)



**860 (4)** 2 of 11



860 (5)



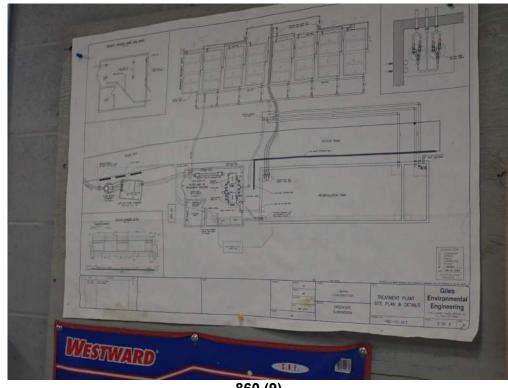
**860 (6)** 3 of 11



860 (7)



**860 (8)** 4 of 11



860 (9)



**860 (10)** 5 of 11



860 (11)



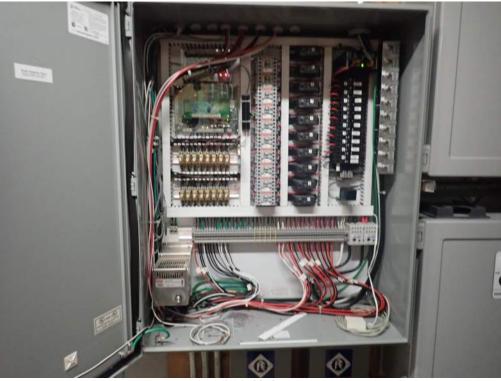
**860 (12)** 6 of 11



860 (13)



**860 (14)** 7 of 11



860 (15)



**860 (16)** 8 of 11



860 (17)



**860 (18)** 9 of 11



860 (19)



**860 (20)** 10 of 11



860 (21)

#### Cowichan Valley Regional District Facility Condition Assessment and Capital Plan Youbou - Sewer Treatment Plant - Functional Code 860

			dno		<u></u>	CC	OMPONENT	CONDITION ASSESSMENT						LIFECYCLE DA	TA	RECOMMENDATION			If recommended work not		Can the current			OPINION OF PROBABLE COST				
BLDG Name	BLDG Type	Function Code	Level 1 Major Grc Elements	Level 2 Group Elements	Level 3 Individu Elements	D	Location / Type	Photo Description & History	Condition	Performance Yr New or Last	Major Action Assessment Date	Assessed By	Age in 2018	Typical Life Cycle or Action Interval	Est. Time Remaining to EOL or Major Action	Recommendation g	Priority	Can this work be phased over multiple years ?	complete can the	Will a failure in this system lead to a loss of use of the facility ?	Can the current condition adversely affect the buildings security of safety ?	Quantity	Unit Rate Unit	Subtotal Repair or Replacement Cost	Consult.	Contin-gency 1 c	₹ % Total in 2017 Dollars	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 /	A Substructure	A10 Foundations	A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundations	1 The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concealed from review, with the exception of some above-grade foundation wall on some elevations. The age of this building was not known and has been assumed.	5	5 201	0 21-Nov	v-17 MH	8	50	42	The foundations are expected to remain Not Applicabl serviceable for the life of the building. No capital expenses associated with this item are expected.	e Not Applicable	Yes	Yes	Yes	No	650	\$20 SF	\$13,000	0%	5% 5	% \$15,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 /	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103001 Standard Sla on Grade	ab Interior of Building At- Grade/ Slab-on-Grade	<ol> <li>The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.</li> </ol>	5	5 201	0 21-Nov	v-17 MH	8	50	42	The concrete slab-on-grade is expected to Not Applicabl remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	e Not Applicable	Yes	Yes	Yes	No	650	\$20 SF	\$13,000	0%	5% 5	% \$15,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 /	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103006 Foundation Drainage	Underground/ Perimeter Drains	<ol> <li>Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.</li> </ol>	5	5 201	0 21-Nov	v-17 MH	8	10	2	Periodic camera inspection and isolated Study repairs as required.	Not Applicable	No	N/A	No	N/A	1	\$500 LS	\$500	0%	0% 5	% \$1,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 /	A Substructure	A10 Foundations	A1030 Slab on Grad	e A103006 Foundation Drainage	Underground/ Perimeter Drains	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5	5 201	0 21-Nov	v-17 MH	8	50	42	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A103006 Foundation Drainage (above).	3 - Future Renewal	N/A	N/A	No	No							
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 E	B Shell	B10 Superstructure	B10 Superstructure	B10 Superstructure	Interior of Building/ Genera Superstructure	I The supertructure is comprised of masony blocks with a woof framed roof. Some efflorescence was noted on the interior, however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was observed or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5	5 201	0 21-Nov	v-17 MH	8	50	42	Maxony structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	ce 3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000 EA	\$2,000	0%	10% 5	% \$3,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 E	B Shell	CB20 Exterior Enclosure	B2010 Exterior Wall	s B201001 Exterior Enclosure	Exterior Walls/ Soffit	<ol> <li>Perforated metal soffit is present at the roof overhangs.</li> </ol>	5	5 201	.0 21-Nov	v-17 MH	8	50	42	The perforated metal soffit is expected to Replacement last the life of the building. No capital expenses associated with this item are expected.	3 - Future Renewal	Yes	Yes	No	No	100	\$20 SF	\$2,000	0%	10% 5	% \$3,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 E	B Shell	B20 Exterior Enclosure	B2010 Exterior Wall	Enclosure	Exterior Walls/Wood Elements	<ol> <li>Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.</li> </ol>	4			v-17 MH		12	4	Repaint wood cladding, install flashing Replacement over exposed wood roof framing.	Renewal	Yes	Yes	No	No	1	\$1,500 EA		0%	10% 5	% \$2,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 E	B Shell	B20 Enclosure	E2030 Exterior Doors	B203001 Solid Doors		1 A metal door (double door) is present on the building.		4 201				30	22	Replace doors at the end of their service Replacement life.	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 EA		0%	5% 5	% \$2,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 E	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Metal Roof Assembly	<ol> <li>The roof is sloped assembly which has been waterproofed with a metal roof assembly. MH was not able to access the roof to confirm the roofing assembly.</li> <li>The roof is drained via gutters to rain water leaders which drain to a below grade system.</li> </ol>	4	4 201	0 21-Nov	v-17 MH	8	40	32	Replace metal roofing at the end of its Replacement service life. Ongoing maintenance of the roof should include review of all penetrations when required.	3 - Future Renewal	No	Yes	No	No	700	\$20 SF	\$14,000	0%	5% 5	% \$16,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 E	B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slope Roof Coverings	Roof/Sloped Roof Assembly	<ol> <li>The roof is sloped assembly which has been waterproofed with a metal roof assembly. MH was not able to access the roof to confirm the roofing assembly.</li> <li>The roof is drained via gutters to rain water leaders which drain to a below grade system.</li> </ol>	5	5 201	0 21-Nov	v-17 MH	8	25	17	Replace gutters at the end of their service Replacement life.	3 - Future Renewal	Yes	Yes	No	No	60	\$10 SF	\$600	0%	10% 5	% \$1,000	
Youbou - Sewer Treatment Plant	Sewer Treatment Plant	860 (	C Interiors	D50 Electrical	D5020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipment		4	4 201	0 21-Nov	v-17 MH	8	20	12	Replace lights at the end of their service Replacement life.	3 - Future Renewal	Yes	Yes	No	No	1	\$200 LS	\$200	0%	0% 5	% \$1,000	

Cowichan Valley Regional District	
Facility Condition Assessment and Capital Plan	

Youbou - Sewer Treatment Plant - Functional Code 860

ta me			đ	ents	_		COMPONENT		CONDITION ASSESSMENT	ī				LIFECYCLE D	ATA	RECOMMEN	DATION			If recommended	1				OPINION	OF PROBAB	LE COST			10-YEAR C	APITAL PLAN						
3 Name	G Type	on Code	la jor Gro nents	up Elem	Individue n ents		<sup>, T</sup> ype			ion ance	r Last ction	it Date d By	018	al le or terval	ne to EOL Action			2	Can this work be phased over	work not complete can the rate of	Will a failure in this system lead to a loss of use o	Can the current condition adversely affect		ete .	tal or nt Cost	r.	ency	5%	2017 15	2018	2019 202	20 2021	2022	2023	2024	2025 :	2026 2027
вгрс	0,8	Functi	Level 1 N	evel 2 Grc	Level 3 In Elemo		Location ,	Photo	Description & History	Conditi	Yr New o Major A	As essmer As sesse	Age in 2	Typical Life Cycle or Action Interval	Est. Time temaining to or Major Acti	Recommendation	Type	Priori	multiple years ?	deterioration be expected to increase ?	the facility ?	the buildings security of safety	Guant .	Unit Ra	Subto Repair Replaceme	Consu	Contin- g	Тах	Total in 201 Dollars	\$0	\$1,000 \$0	0 \$2,000	\$0	\$0	\$0	\$0	\$0 \$1,000
Youbou - Sewer Treatment Plant		860 hent	A Substructure	A10 Foundation	s A1010 Standard Foundations	A101001 Wall Foundations	Underground/ Foundat:	ons 1	The foundation is comprised of cast-in-place concrete footings with concrete foundation walls. The foundation is concreased from view, with the exception of some above grade foundation wall on some elevations. The age of this building was not known and has been assumed.	5 5	2010	21-Nov-17 MH	8	50	42	The foundations are expected to remain serviceable for the life of the building. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	650	\$20 S	513,000	0%	5%	5%	\$15,000								
Youbou - Sewer Treatment Plant	Sewer Treatme Plant	860 hent	A Substructure	A10 Foundation	s A1030 Slab on Gra	de A103001 Standard on Grade	Slab Interior of Building At-G Slab-on-Grade	rade/ 1	The floor is concrete slab-on-grade. Isolated hairline cracking was observed. No evidence of major settlement or heaving was reported or observed.	5 5	2010	21-Nov-17 MH	8	50	42	The concrete slab-on-grade is expected to remain serviceable for the life of the building, with isolated repairs, if needed. No capital expenses associated with this item are expected.	Not Applicable	Not Applicable	Yes	Yes	Yes	No	650	\$20 S	\$13,000	0%	5%	5%	\$15,000								
Youbou - Sewer Treatment Plant			A Substructure	A10 Foundation	s A1030 Slab on Gra	de A103006 Foundati Drainage	on Underground/ Perimete Drains	r 1	Perimeter drain pipes are assumed to be installed at the footing level. No issues related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2010	21-Nov-17 MH	8	10	2	Periodic camera inspection and isolated repairs as required.	Study	Not Applicable	No	N/A	No	N/A	1	\$500 L	\$500	0%	0%	5%	\$1,000		\$1,000						
Youbou - Sewer Treatment Plant			A Substructure	A10 Foundation	s A1030 Slab on Gra	de A103006 Foundati Drainage	on Underground/ Perimete Drains	r 1	Permeter drain pages are assumed to be instated at the footing view. No issuer related to foundation drainage were noted by facility staff. No information was available regarding the scoping of the system to review for continuity.	5 5	2010	21-Nov-17 MH	8	50	42	The foundation drainage is expected to last the life of the building. No major capital expenditures are expected to be required. Note: this should be updated with the results of the foundation drainage review recommended in A10306 Foundation Drainage (above).	Contingency	3 - Future Renewal	N/A	N/A	No	No															
Youbou - Sewer Treatment Plant			B Shell	B10 Superstruct	ure B10 Superstructur	e B10 Superstructur	e Interior of Building/ Ger Superstructure	ieral 1	The superstructure is comprised of masonry blocks with a woof framed roof. Some efflorescence was noted on the interior, however, MH understands that no active leaks are present. No settlement or other evidence of structural distress was belavered or reported. There was no evidence or reports of long- term leakage that would allude to concealed structural damage.	5 5	2010	21-Nov-17 MH	8	50	42	Masonry structural components are expected to last the life of the building. A contingency budget has been included for isolated mortar joint replacement and sealant replacement throughout the cinder block assemblies.	Repair Allowanc	e 3 - Future Renewal	Yes	Yes	Yes	No	1	\$2,000 E	A \$2,000	0%	10%	5%	\$3,000								
Youbou - Sewer Treatment Plant			B Shell	CB20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/ Soffit	1	Perforated metal soffit is present at the roof overhangs.	5 5	2010	21-Nov-17 MH	8	50	42	The perforated metal soffit is expected to last the life of the building. No capital expenses associated with this item are expected.	Replacement	3 - Future Renewal		Yes	No	No	100	\$20 S	\$2,000	0%	10%	5%	\$3,000								
Youbou - Sewer Treatment Plant	Sewer Treatme Plant	860 tent	B Shell	B20 Exterior Enclosure	B2010 Exterior Wa	lls B201001 Exterior Enclosure	Exterior Walls/Wood Elements	1	Wood cladding and wood trim (included roof framing) is present through sections of the building. The wood cladding sections appear to be retrofit areas. Some deterioration was noted in these elements.	4 4	2010	21-Nov-17 MH	8	12	4	Repaint wood cladding, install flashing over exposed wood roof framing.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 E	\$1,500	0%	10%	5%	\$2,000			\$2,000					
Youbou - Sewer Treatment Plant	Sewer Treatme Plant	860 nent	B Shell	B20 Enclosure	E2030 Exterior Do	ors B203001 Solid Doc		1	A metal door (double door) is present on the building.	4 4	2010	21-Nov-17 MH		30	22	Replace doors at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$1,500 E	\$1,500	0%	5%	5%	\$2,000								
Youbou - Sewer Treatment Plant	Sewer Treatme Plant		B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slop Roof Coverings	e Roof/Metal Roof Assem	bly 1	The roof is stoped assembly which has been waterproofed with a metal roof assembly. MH was not able to access the roof to confirm the roofing assembly. The roof is drained via gutters to rain water leaders which drain to a below grade system.	4 4	2010	21-Nov-17 MH	8	40	32	Replace metal roofing at the end of its service life. Ongoing maintenance of the roof should include review of all penetrations when required.	Replacement	3 - Future Renewal	No	Yes	No	No	700	\$20 S	\$14,000	0%	5%	5%	\$16,000								
Youbou - Sewer Treatment Plant			B Shell	D30 Roofing	B3010 Roof Coverings	B301001 High Slop Roof Coverings	e Roof/Sloped Roof Asser	ibly 1	The roof is sloped assembly which has been waterproofed with a metal roof assembly. MH was not able to access the roof to confirm the roofing assembly. The roof is drained via gutters to rain water leaders which drain to a below grade system.	5 5		21-Nov-17 MH			17	Replace gutters at the end of their service life.	Replacement	3 - Future Renewal		Yes	No	No	60	\$10 S	÷ \$600	0%	10%	5%	\$1,000								
Youbou - Sewer Treatment Plant	Sewer Treatme Plant	860 nent	C Interiors	D50 Electrical	DS020 Lighting and Branch Wiring	D502002 Lighting Equipment	Exterior Lighting Equipn	ent	An exterior light is present on the building near the entrance.	4 4	2010	21-Nov-17 MH	8	20	12	Replace lights at the end of their service life.	Replacement	3 - Future Renewal	Yes	Yes	No	No	1	\$200 L	\$ \$200	0%	0%	5%	\$1,000								\$1,000

Cowichan Valley Regional District



Photo 1



Photo 2