

# REGIONAL DISTRICT OF NANAIMO

## Water Service Area Annual Report 2018



### Descanso Bay Regional Park Water System



June 2019

REGIONAL DISTRICT OF NANAIMO  
*Water & Utility Services Department*

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Appendix A - Map of Descanso Bay Regional Park Water System

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## 1. Introduction

The following annual report describes the Descanso Bay Regional Park Water System and the water quality and production data from 2018. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response Plan, and the Cross Connection Control Program. This report is to be submitted to Island Health by the spring of 2019.

## 2. Descanso Bay Regional Park Water System

The Regional District acquired the Descanso Bay Regional Park property in 2002 from the Coastal Community Credit Union. The park is accessed from Taylor Bay Road and comprises an area of 16 hectares (40 acres) on the west side of Gabriola Island. There are 5 standpipes (taps) for drinking water supply at the campground, including one at the Park Office. The water source comes from one groundwater well located within the park. The water is filtered, disinfected with ultraviolet radiation, and stored in one cistern. The on-site water treatment system was installed in 2010. A portable generator is available for emergency power outages. A map of the Descanso Bay Regional Park Water System is provided in Appendix A for reference.

### 2.1 Groundwater Well

The Descanso Bay Regional Park well is 54.8 metres deep and located approximately 50 metres northwest of the Park Office. The well water is filtered with a 5 and 10 micron filter, and then disinfected with UV (ultraviolet) radiation.

### 2.2 Reservoir

One polyethylene cistern is located behind the pumphouse next to the Park Office. The cistern has a capacity of 9.0 m<sup>3</sup> (2,000 imperial gallons).

### 2.3 Distribution System

The water distribution system is comprised of 675 metres of 3-inch PVC (poly-vinylchloride) pipe. There are no fire hydrants in this water system. There are five standpipes from which to draw drinking water in the campground (also known as yard hydrants).

**Descanso Bay Park  
Pumphouse  
(green cistern is located  
behind the pumphouse)**



### 3. Water Sampling and Testing Program

Water sampling and testing is carried out monthly from a standpipe in the water system. The following table includes a summary of all testing:

Timing	Location	Tests
Monthly (from May to Sept)	BC Centre for Disease Control	Total coliforms, E.Coli
Quarterly (from Oct to April)	BC Centre for Disease Control	Total coliforms, E.Coli
Annually (October)	Bureau Veritas (formerly Maxxam) Labs	Complete potability testing of raw well water at wellhead, including UV Transmittance
Annually (May)	Bureau Veritas (formerly Maxxam) Labs	Complete potability testing of treated water

### 4. Water Quality - Source Water and Distribution System

Water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B. Bacteriological results are posted on the Island Health website at:

[http://www.healthspace.ca/Clients/VIHA/VIHA\\_Website.nsf/Water-Samples-Frameset?OpenPage](http://www.healthspace.ca/Clients/VIHA/VIHA_Website.nsf/Water-Samples-Frameset?OpenPage), then click on [Gabriola Island](#), then click [Descanso Bay Regional Park](#).

### 5. Water Quality Inquiries and Complaints

No complaints were received from the Descanso Bay Regional Park Water System in 2018. Inquiries were limited to seasonal campground hours.

**Standpipe for water supply in Descanso Bay Regional Park**





## 6. Groundwater Production and Consumption

The volume of groundwater pumped from the Descanso Bay Regional Park well is not metered, but the water consumption at the standpipes is estimated to be 450 cubic metres per year. The campground is only used seasonally.

## 7. Maintenance Program

A daily pump station inspection is carried out to reduce or eliminate the risk of contamination and system failure. Watermains are flushed once annually in the spring. The water storage cistern is drained every fall and then cleaned in the spring before it is put back into service. The office runs off a smaller pressure tank. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

## 8. Operator Certification

The Regional District Water & Utility Services staff is comprised of one Manager, one Project Engineer, one Engineering Technologist, one Engineering Technician, one Chief Operator, and seven certified operators. The Park Operator has the Small Water Systems Operator certification. The operators receive ongoing training and certification in:

- |                            |   |                            |
|----------------------------|---|----------------------------|
| ✓ Water Treatment          | ✓ Chlorine Handling                                       | ✓ Confined Space Awareness |
| ✓ Water Distribution       | ✓ WHMIS (Workplace Hazardous Material Information System) | ✓ Traffic Control          |
| ✓ Wastewater Collection    | ✓ TDG (Transportation of Dangerous Goods)                 | ✓ Fall Protection          |
| ✓ Cross Connection Control |   | ✓ First Aid                |
| ✓ Asbestos Awareness       |   |                            |

## 9. Water System Projects

### 9.1 2018 Completed Studies & Projects

- Completed a Cross Connection Control Bylaw in draft format;
- Updated the online GIS Water Map for aquifer and watershed info;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Updated the online GIS Water Map update for aquifer and watershed info;
- Initiated New Drinking Water and Watershed Protection Action Plan preparation;
- Completed Water Conservation Evaluation Report;
- Completed additional educational programs.

## 9.2 2018 Proposed Projects & Upgrades

- Adopt Cross Connection Control Bylaw;
- Implement a Water Systems SCADA Master Plan;
- Begin DWWP Water Conservation Plan development;
- Implement new Drinking Water and Watershed Protection Action Plan;
- Continue to offer numerous water-saving incentives via rebates;
- Develop Cross Connection Control educational material.

## 10. **Emergency Response Plan**

The Regional District Emergency Response Plan (ERP) contains procedures and contact information to efficiently respond to water system emergencies such as contamination of water supply, loss of supply, pump failure, and drought management. The ERP was reviewed and updated in 2018, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERP is also attached to this report in Appendix C.

## 11. **Cross Connection Control**

In 2017, a more robust Cross Connection Control Plan was prepared that fully defines the CCC program, including standard operating procedures, plumbing code references, reporting procedures, survey schedules, backflow prevention standards, detailed installation schematics, blank test forms, testing reminders, and non-compliance letters. A minimum of two RDN Operators are certified in Backflow Assembly Testing at all times. The RDN Manager of Water Services is the designated Cross Connection Control Manager.

In 2019, a stand-alone Cross Connection Control Bylaw will be adopted that contains definitions, authorizations, applications, liability, rules, regulations, testing requirements, and reporting requirements. The bylaw will address retrofits, prohibitions, special circumstances, reclaimed water use, alternate water sources, failure to comply, inspections, testing, offences, penalties and more. A webpage will be established on the Water Services website that will educate RDN customers about cross connections and list the relevant links to current standards and resources.

## 12. **Cyber Security**

The RDN uses a multi-level approach to cyber-security. Corporate network security is employed via a universal threat management gateway that implements various methods of data security, which includes daily definition updates to block known cyber threats. In addition, all RDN PC's are protected with anti-virus software. RDN water systems are connected to the corporate network via IP-Sec VPN's for remote management by information technology and equipment operators. Future infrastructure upgrades will see our water systems located on segregated networks to limit the vulnerability from cybersecurity threats.

### 13. Closing

An annual report for the year 2019 will be prepared and submitted to Island Health in the Spring of 2020. The Descanso Bay Regional Park Water System Annual Report is also available on our website at [www.rdn.bc.ca](http://www.rdn.bc.ca) in the REGIONAL SERVICES section, under “Parks” then “Regional Parks and Trails”.



North Cove, Gabriola Island

**APPENDIX A**

**MAP OF DESCANSO BAY REGIONAL PARK  
WATER SYSTEM**



**DESCANSO BAY REGIONAL PARK  
WATER SYSTEM**

Descanso Bay Regional Park



## APPENDIX B

### WATER QUALITY TESTING RESULTS

# DESCANSO BAY REGIONAL PARK WATER SYSTEM



**Facility Location:**

595 Taylor Bay Road  
Gabriola Island

**Facility Information:**

Facility Type: DWS

**Facility Sampling History:**

<u>Location</u>	<u>Date</u>	<u>Total Coliform</u>	<u>E. Coli</u>
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	12-Dec-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	8-Nov-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	8-Nov-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	8-Nov-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	18-Oct-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	18-Oct-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	18-Oct-2018	L1	L1
AUDIT Descanso Bay Regional Park (Manager's Cabin), 595 Taylor Bay Road	10-Sep-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	6-Sep-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	6-Sep-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	6-Sep-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	8-Aug-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	8-Aug-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	8-Aug-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	11-Jul-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay	11-Jul-2018	L1	L1

<u>Location</u>	<u>Date</u>	<u>Total Coliform</u>	<u>E. Coli</u>
Road			
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	11-Jul-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	7-Jun-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	7-Jun-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	7-Jun-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	8-May-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	8-May-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	8-May-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	11-Apr-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	11-Apr-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	11-Apr-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	22-Mar-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	22-Mar-2018	L1	L1
Descanso Bay - Stand pipe #5, 595 Taylor Bay Road	11-Jan-2018	L1	L1
Standpipe #3 - Descanso Bay , 595 Taylor Bay Road	11-Jan-2018	L1	L1
Standpipe #4 Descanso Bay Regional Park, 595 Taylor Bay Road	11-Jan-2018	L1	L1

**Interpreting Sample Reports**

In VIHA, the results of drinking water sampling are reported using the following coding system:

- L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present
- OG Overgrown - Meaning: Too many background bacteria to give an accurate count
- EST Estimated Count
- A Sample not tested; Too long in transit
- C Sample leaked/broken in transit
- D Sample not tested; No collection date given
- T Sample submitted unsatisfactory. Exceeded 30 hours holding time, please resample.
- NS No sample received with requisition

CDWG=Canadian Drinking Water Guidelines  
OG= Operational Guidance Value

MAC=Maximum Acceptable Concentration  
AO= Aesthetic Objective.



Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		April 8 2014	Nov 12 2014	May 16 2016	October 4 2016	June 20 2017	Nov. 29 2018
<b>Miscellaneous Inorganics</b>									
Fluoride	mg/L	1.5	MAC	0.21	0.39	0.29	0.29	0.64	0.26
Alkalinity (total as CaCO <sub>3</sub> )	mg/L			140	150	147	141	145	136
<b>Anions</b>									
Dissolved Sulphate	mg/L	500	AO	5.6	6.4	5.79	6.1	6.44	6.2
Dissolved Chloride	mg/L	250	AO	14.5	14.2	14	14	15	15
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	<0.0050
<b>Miscellaneous</b>									
Apparent Colour	Colour Unit			5	5	10	5	5	<5.0
<b>Nutrients</b>									
Total Ammonia	mg/L			<0.02	<0.02	0.0055	0.01	0.018	<0.020
<b>Physical Properties</b>									
Conductivity	µS/cm			312	335	322	323	333	309
pH	pH	6.5:8.5	AO	8	8.1	8.34	8.24	8.37	8.15
TDS	mg/L	500	AO	186	196	170	200	198	156
Turbidity	NTU			<0.5	<0.5	<0.10	0.16	0.28	0.22
<b>Microbiological Parameters</b>									
E.coli	MPN/100mL	1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Coliforms	MPN/100mL	1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>Calculated Parameters</b>									
Total Hardness (CaCO <sub>3</sub> )	mg/L			57	51	56	52.2	47.4	54.2
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	<0.020
<b>Elements</b>									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002
<b>Total Metals</b>									
Total Aluminum	mg/L	0.1	OG	<0.025	0.009	0.0037	0.0048	0.0133	<0.003
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	0.00125	0.00116	0.00144	0.00119	0.001	0.00124
Total Barium	mg/L	1	MAC	<0.00025	0.00065	<0.001	<0.001	<0.001	<0.001
Total Beryllium	mg/L			<0.00025	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	0.142	0.226	0.208	0.151	0.417	0.131
Total Cadmium	mg/L	0.005	MAC	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.0025	<0.0005	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0005	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.0023	0.003	0.0105	0.00445	0.00442	0.00788
Total Iron	mg/L	0.3	AO	<0.010	0.019	0.0121	0.0071	0.0119	<0.005
Total Lead	mg/L	0.01	MAC	<0.0005	<0.0001	0.00025	<0.0002	0.00023	0.00053
Total Manganese	mg/L	0.05	AO	0.025	<0.0010	<0.001	0.0045	0.0015	0.013
Total Molybdenum	mg/L			0.00135	0.00363	<0.002	0.0018	0.005	0.0015
Total Nickel	mg/L			<0.0010	<0.0002	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			9.52	8.97	11.1	9.82	9.74	9.55
Total Silver	mg/L			<0.00025	<0.00005	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.0589	0.0555	0.0588	0.0576	0.0473	0.0588
Total Thallium	mg/L			<0.00005	<0.00001	<0.00005	<0.00005	<0.00001	<0.00001
Total Tin	mg/L			<0.0005	0.0005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.0025	<0.0005	<0.0005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.00005	0.00001	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			<0.0005	0.0005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	0.0137	0.0071	0.0114	0.0072	0.0067	0.0136
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	<0.0001
Total Calcium	mg/L			17.9	16.4	17.7	16.4	15.5	17
Total Magnesium	mg/L			2.87	2.4	2.86	2.71	2.1	2.87
Total Potassium	mg/L			<0.5	<0.1	0.146	0.13	0.17	0.129
Total Sodium	mg/L	200	AO	54.5	62.1	58.2	52.2	65.8	50.9
Total Sulphur	mg/L					<3.0	<3.0	<3.0	<3.0



CDWG=Canadian Drinking Water Guidelines  
OG= Operational Guidance Value

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AO= Aesthetic Objective.



Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		April 8 2014	Nov. 12 2014	May 16 2016	October 4 2016	June 20 2017	Nov. 29 2018
<b>Miscellaneous Inorganics</b>									
Fluoride	mg/L	1.5	MAC	0.26	0.58	0.032	0.28	0.64	0.26
Alkalinity (total as CaCO <sub>3</sub> )	mg/L			140	150	148	144	146	138
<b>Anions</b>									
Dissolved Sulphate	mg/L	500	AO	5.5	6.8	6.13	5.9	6.2	6.4
Dissolved Chloride	mg/L	250	AO	14	13.6	14	14	15	15
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	<0.0050
<b>Miscellaneous</b>									
Apparent Colour	Colour Unit			5	6	10	5	5	5
<b>Nutrients</b>									
Total Ammonia	mg/L			<0.02	<0.02	0.0067	0.015	0.031	<0.020
<b>Physical Properties</b>									
Conductivity	µS/cm			312	338	322	323	333	315
pH	pH	7.0:10.5	AO	8	8.1	8.34	8.25	8.36	8.21
TDS	mg/L	500	AO	190	196	184	190	178	160
Turbidity	NTU			0.5	<0.5	0.4	0.18	0.44	0.15
<b>Microbiological Parameters</b>									
E.coli	MPN/100mL	1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Coliforms	MPN/100mL	1	MAC	<1.0	<1.0	53.1	1	43	<1.0
<b>Calculated Parameters</b>									
Total Hardness (CaCO <sub>3</sub> )	mg/L			60	46	55.2	52.4	48.9	53.8
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	<0.020
<b>Elements</b>									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002
<b>Total Metals</b>									
Total Aluminum	mg/L	0.1	OG	0.028	0.013	0.0036	0.0073	0.0158	0.0032
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	0.00151	0.00113	0.00139	0.00123	0.00102	0.00128
Total Barium	mg/L	1	MAC	0.00042	0.00079	<0.001	<0.001	<0.001	<0.001
Total Beryllium	mg/L			<0.00025	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	0.159	0.282	0.21	0.161	0.414	0.132
Total Cadmium	mg/L	0.005	MAC	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.0025	<0.0005	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0005	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.0011	0.0017	0.00627	0.00448	0.00308	0.00185
Total Iron	mg/L	0.3	AO	0.028	0.013	0.0313	0.0145	0.0208	0.0062
Total Lead	mg/L	0.01	MAC	0.0005	0.0002	0.00044	0.00045	0.00024	0.00083
Total Manganese	mg/L	0.05	AO	0.034	0.0022	0.0033	0.0059	0.0048	0.0287
Total Molybdenum	mg/L			0.00161	0.00486	0.002	0.0019	0.0049	0.0015
Total Nickel	mg/L			<0.0010	<0.0002	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0005	<0.0001	<0.0001	<0.0001	<0.001	<0.0001
Total Silicon	mg/L			10.3	8.28	10.8	10.1	10.3	9.53
Total Silver	mg/L			<0.00025	<0.00005	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.0638	0.0507	0.0591	0.0575	0.0486	0.059
Total Thallium	mg/L			<0.00005	<0.00001	<0.00005	<0.00005	<0.00001	<0.00001
Total Tin	mg/L			<0.0005	0.0008	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.0025	0.0006	<0.005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.00005	0.00002	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			<0.0005	0.0005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	0.0113	0.0054	0.0092	0.006	<0.005	<0.005
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	<0.0001
Total Calcium	mg/L			19	15	17.4	16.4	16.1	16.9
Total Magnesium	mg/L			3.11	2.04	2.85	2.76	2.11	2.82
Total Potassium	mg/L			<0.5	<0.1	0.14	0.133	0.174	0.128
Total Sodium	mg/L	200	AO	59.6	63.9	57.3	53.4	67.3	51.1
Total Sulphur	mg/L					<3.0	<3.0	<3.0	<3.0
UV Transmittance	%/cm			95.4	95.8	94.9		93.4	96