2017

Island Health MHO Supplementary Report on Drinking Water

INTRODUCTION

In November 2014, Island Health released the Medical Health Officer's report on drinking water in the Health Authority. Water, Water Everywhere: Drinking Water in Island Health provided an assessment of the state of drinking water as of March 2012. The preparatory time interval for release is an indication of the challenges in producing such reports from data collection, report preparation and reviews. The Report included 32 recommendations that laid a path for improving the oversight of drinking water and fulfilling the responsibilities of the Medical Health Officers/Drinking Water Officers under the *Drinking Water Protection Act (DWPA)*.

Since March 2012 considerable improvements have been made, especially around accurate reporting of performance measures. This Supplementary Report looks at progress on the 32 recommendations. Progress on the recommendations has been classified as *Completed*, *In Progress*, *Ongoing*, *Not Achieved* and *Not Evaluated*.

- Seven recommendations have been *Completed* and will not be further reported on.
- Seven recommendations are *In Progress* and are considered high probability of achievable.
- Those rated as *Ongoing* reflect recommendations that are not time limited with a fixed end point and incorporate continuous processes.
- Seven recommendations are *Not Achieved* and demonstrate no evidence of significant progress in being addressed.

Commentary on progress has been provided, and where statistical information is available, is reported in relation to the recommendation to demonstrate progress.

The Provincial Health Officer (PHO) is developing more relevant indicators to monitor drinking water in the province and has seemingly adopted the suggested metrics put forward in recommendation 32. A working group was established resulting in a revised set of indicators, some of which reflect the aspirations of the recommendations of the 2014 *Water, Water Everywhere* Report. In light of this positive work, some recommendations from the Island Health report, categorized as Ongoing or Not Evaluated, will be routinely monitored in future annual provincial reporting.

Across the Island Health region, many water systems have made good progress and a section of this Supplementary Report is included to highlight these successes. The Island was affected by a significant drought in 2015. Climate change models suggest decreasing snow packs in the future for the Island and an increasing frequency of localized droughts. Ensuring adequate quantity of water jurisdictionally lies outside of the scope of the *DWPA;* nevertheless it is inherently necessary for health, sanitation, fire suppression and food security amongst other health outcomes. This report highlights the actions of Environmental Health Officers (EHOs), who assist in assessing and responding to the threat of drought amongst water systems.

Education and voluntary compliance tends to lead to better and more acceptable solutions to drinking water system concerns. Many systems are achieving success. However, from time to time issues surface that require enforcement actions under the *DWPA* such as when voluntary compliance has been resisted. An example is the Comox Lake watershed, which serves the Comox Valley Regional District water systems. The communities are unable to sustain their existing filtration deferral and will need a more definitive treatment solution, which will include an approved method of filtration. At issue is an ongoing problem in maintaining a consistent quality of source water, with some observed negative

impacts being secondary to human activity. In the course of events, parties in the area have been required by Order to undertake source water assessments for this system. Island Health's Medical Health Officer (MHO) for the area has requested a section 31 Drinking Water Protection Plan process under the *DWPA* on three occasions since 2008. In 2008 and 2011, the Minister responsible at the time determined that a Drinking Water Planning Process should be established in the expectation that this would lead to a comprehensive and acceptable Drinking Water Plan. In the summer of 2015 the MHO reviewed events affecting drinking water quality and the draft plan. In her expert opinion, expectations were not realized by the prescribed process and she reiterated her request for a section 31 Order. The recommendation from the Provincial Health Officer remains before the Minister for consideration at this time. Mitigation of the source water problems and/or filtration in all likelihood will be required in the Comox Valley to ensure quality, safe drinking water into the future.

RECOMMENDATIONS

	Recommendation	Response as of 2015	Assessment
I - 1	Health Protection and Environmental Services ensure that water supply systems currently undefined regarding source type in Island Health records be appropriately classified by December 2014.	Classification based on source type was complete for all 909 systems. This item will be captured in PHO reporting requirements.	Completed
III - 2	Health Protection and Environmental Services document in Island Health records wellhead/watershed protection status for all water supply systems over 15 connections by December 2014.	Systems that have completed a source to tap assessment have complied with this expectation. Extraction of this information requires manual review of records. A process to extract the information will be required. This item will be expected in PHO reporting.	Not Evaluated
III - 3	All water supply systems with greater than 300 connections have "completion of wellhead/watershed assessment" included as a condition on operating permits by March 2016.	59 water systems have > 300 connections. Of these, about half either were known to have a plan or had a condition on the operating permit. It was identified that the drinking water program is to develop standard wording on assessments and conditions on operating permits, as well as inventory which systems have a plan in place. This item will be expected in PHO reporting.	In Progress
III - 4	Further, that all assessments should be completed and documented before March 2018.	Compliance with this recommendation is not required until 2018, however, current data management structures do not allow for rapid assessment of compliance and a method will be required both for regional and provincial reporting. This item will be expected in PHO reporting.	Not Evaluated

III - 5	The need for a Watershed Protection Plan should be included on the conditions of an operating permit for water supply systems with greater than 300 connections where significant threats to the watershed are identified, with such planning completed by March 2019.	Unable to provide this information until standardization of conditions on operating permits and documentation are completed as per recommendation *III-3*. This item will be expected in PHO reporting.	In Progress
III - 6	Island Health ensure that short form wellhead/watershed assessments should be documented and completed on water supply systems of 15 to 300 connections by March 2019. Determination of when to complete smaller water supply system assessments should be undertaken by March 2019.	While not required prior to 2019, progress towards this recommendation requires enhancements in the electronic database to capture information on source water protection activities and will be required in provincial reporting prior to this date. This item will be expected in PHO reporting.	Not Evaluated
III - 7	Health Space database be modified to be able to track conditions on an operating permit relative to source water protection, and identify status of wellhead/watershed assessments and Wellhead/Watershed Protection Plans.	Information on conditions on operating permits may be entered either into a free text field in Health Space or included as an appendix. Discussions on ensuring standard formatting of conditions and entry into specific fields are still required.	Not Achieved
III - 8	Island Health develop a course eligible for Continuing Education Units under Environmental Operators Certification Program on source water protection. The thematic offering will focus upon developing a plan specific to the water supply systems of the participating operators. The target audience will be small water supply system operators and suppliers.	A course on Source Protection Planning for small water systems has been developed.	Completed
IV - 9	Health Protection and Environmental Services, by December 2014, review and ensure that all water supply systems with greater than 150 connections that require treatment/system upgrades have documented conditions on operating permits with time bound deadlines for completion.	Of 59 systems documented with more than 150 connections, 38 have conditions on their operating permits documented (25 of 43 surface water systems). The quality of the conditions and reporting on compliance or progress to achieving conditions is not standardized and remains a program vulnerability and risk.	Not Achieved
IV - 10	Island Health, by April 2014, ensure that the processes required to ensure water supply systems of 15 to 150 connections meet treatment expectations by 2021 are developed by Health Protection and	Small water supply system program developed and roll out started by April 2014. It is recommended that an indicator be developed for monitoring progress and reported on annually	In Progress

	Environmental Services.	regarding adherence to treatment expectations for smaller water systems.	
IV - 11	Island Health, by March 2016, ensure that processes for ensuring appropriate treatment is implemented in water supply systems of less than 15 connections be developed and communicated by Health Protection and Environmental Services.	Operationalization of the small water supply system program from recommendation *IV-10* did not differentiate by size of system and is applicable to the less than 15 connections group. Provincially, revisiting the very small water systems has been initiated and may affect application of these processes for the very small water systems.	Completed
IV - 12	Annually, Island Health report on progress towards compliance with Surface Water Treatment Objectives based on population served as well as by size of the water supply system for those systems dependant on surface water or combined sources. When Ground Water Treatment Objectives are available, this report should include ground water based systems.	This item will be expected in PHO reporting. Ground Water Treatment Objectives were posted provincially in December 2015 and will take some time to implement. An annual report continues to be recommended.	In Progress
V - 13	BC Ministry of Health be encouraged to develop planning and support materials for asset management and distribution system operation.	BC Ministry of Health advised and discussions commenced with the provincial Drinking Water Leadership Council on development of an approach to asset management.	Completed
V - 14	Island Health ensure that asset management planning as well as distribution system operation and management, be incorporated into conditions on the operating permits for water supply systems greater than 300 connections by March 2016.	Not yet started.	Not Achieved
VI - 15	Island Health and water suppliers strive to increase the number of water supply systems that submit 90% or more of the required bacteriological samples.	Good progress made to comply with testing during the recommended time periods: 2012 – 32% of water supply systems met 90% of sampling frequency. 2013 – 50.4% of water supply systems met sampling frequency. 2014 – 52.6% of water supply systems met sampling frequency. This item will be expected in PHO reporting.	Ongoing

VI - 16	Island Health reports annually on compliance with: annual chemical analysis for large water systems, three year chemical sampling for systems with 15 to 300 connections and five year chemical sampling for systems with less than 15 connections. Such chemical monitoring should be inclusive of disinfection by-products where chlorination or chloramination processes are used.	Good progress made: 2012 – no standard record of water supply systems chemical analysis 2013 – 57% of water supply systems did chemical analysis. 2014 – 66% of water supply systems with chemical analysis. This item will be expected in PHO reporting.	Ongoing
VI - 17	Island Health develop consistent policy on expectations for monitoring disinfection by-products based on type of treatment and size of the water supply system by March 2015.	Guidelines for drinking water officials developed. The guidelines have not been adopted as policy.	In Progress
VI - 18	Island Health develop a process for addressing disinfection by-products including monitoring and corrective actions as required by March 2015.	No guidance is currently provided in support of addressing disinfection by-products.	Not Achieved
VII - 19	Island Health provide, to the best extent possible, support for small water supply system operators; in governance modelling, in the amalgamation of adjacent systems, in the shift to management of systems by regional or municipal government and in encouraging that pricing for water adequately reflects the lifecycle management requirements for individual systems.	Resources development by BCWWA (British Columbia Water and Wastewater Association) and Sustainable Infrastructure Society augment activities at the Ministry of Health in better defining and addressing support for small water systems. It is recommended that success stories on addressing small water system issues be shared with operators and the public.	Ongoing
IX - 20	Island Health ensure all water supply systems serving over 500 persons per day are classified by Environmental Operators Certification Program and have staff certified to the appropriate level. Continue to require some level of training for operators of small water supply systems. Until all larger water supply systems are classified, Island Health report annually on the classification of the larger water supply systems distribution and treatment.	Completed by Environmental Operators Certification Program.	Completed
IX - 21	Island Health is to develop and provide courses for the Environmental Operators Certification Program with a target audience of small water supply system	Island Health has developed courses for Water Quality Monitoring, Writing an Emergency Response and Contingency Plan and Source Protection Planning.	Ongoing

	operators/suppliers and to report on course attendance and evaluation by March 2015.	Island Health has offered to provide these courses, and to date have not been incorporated into continuing education efforts on the Island. Focused educational activities continue with some partners.	
IX - 22	A long term education plan be developed that establishes a new training program every year over the next five years.	Training sessions for EHOs and others with responsibilities within the *DWPA* have been well attended and appreciated. Programs specific to small water supply systems and others have been prepared.	Not Achieved
X - 23	Island Health to work with water supply systems to ensure their annual reports are prepared in a timely fashion and adequately communicated to their system users.	Records are not consistently maintained to evaluate progress towards meeting this recommendation.	Not Achieved
X - 24	Island Health implement a more consistent approach to addressing water supply systems on water advisories through recently developed policy tools. These tools include: guidance on issuing and removing Boil Water Notices, routinely updating progress reports to ensure deadlines are met; moving to the next step on the enforcement continuum for systems that are not progressing to upgrade their systems to remove long-term Boil Water Notices, or to meet treatment objectives to reduce periodic short-term Boil Water Notices.	As of March 31, 2013 there were 44 Boil Water Notices (BWN) in effect. During the 2012/12 fiscal year, 35 new BWN were issued and 12 longer term advisories were resolved As of March 31, 2014 there were 32 BWN in effect. During the 2013/14 fiscal year, 41 new notices were issued and 20 were resolved (of any age). From April 1, 2012 to December 15, 2015 107 BWN were resolved within 1 month, 36 within 3 months, 12 within 1 year, 19 between 1 – 5 years, and 13 in 10 years. As of December 15, 2015 there are 28 BWN in place, of those, 11 were in place from the Ombudsperson's report time (June 2008). Over this time frame, 12 water supply systems from the Ombudsperson's cohort have been resolved. This item will be expected in PHO reporting. Greater standardization of application of the Surface Water Treatment Objectives (SWTO) has resulted in several larger water supply systems requiring repeated public notification including: Nanaimo, Comox Valley, Lake Cowichan, Sayward and Bamfield.	In Progress

XI - 25	Island Health continues to work with water suppliers to ensure they have adequate and up to date Emergency Response and Contingency Plans.	2012 – 447 water supply systems had current Emergency or Contingency Plans, leaving 443 systems with NO plan. 2013 – 576 water supply systems with current Plans, leaving 316 systems with No plan. 2014 – 747 water supply systems have current Plans, leaving 145 systems with No plans. This item will be expected in PHO reporting.	Ongoing
XI - 26	Island Health reports annually on compliance with emergency response planning and reports on incidents involving the activation of Emergency Response Plans by water suppliers.	No current mechanism to consistently collect information on incidents where Emergency Response Plans were activated.	Not Evaluated
XI - 27	Island Health continue to work with other stakeholders (Royal Canadian Mounted Police, British Columbia Centre for Disease Control, local laboratories and water suppliers), to ensure that the emergency response to potential acts of vandalism or terrorism is as rapid and effective as possible.	This item was referred to provincial agencies to explore in conjunction with general threat assessment and response. To date no definitive process in place.	In Progress
XII - 28	Island Health to review the status of all operating permits for water supply systems and update as required, with consideration given to attaching terms and condition by December 2014.	March 2012 – only 477 water supply systems had operating permits, with 132 of them having conditions. This left 415 systems without operating permits. March 31, 2013 – 797 water supply systems had operating permits, 253 of them having conditions. March 31, 2014 – 831 water supply systems had operating permits, 258 of them having conditions. There were no systems without operating permits in 2013 and 2014. December 2015 – 896 of 909 systems had operating permits.	Completed
XII - 29	Island Health report annually on compliance, enforcement and complaint activity.	From April 1, 2012 to date there were 27 complaints received and investigated by Island Health. Four orders were issued. One was completed by the deadline; the remaining three have compliance dates outside of the scope of this Supplemental Report. One violation ticket was issued.	Ongoing

		Ombudsman investigations were initiated for the Little Qualicum River Water system and for multiple systems from Nanoose Bay to Qualicum Beach. This item will be expected in PHO reporting and will meet the need for formal annual reporting.	
XIII - 30	The Health Space database include documentation, with retrieval capacity for common and unusual threats to water supply systems.	Not achieved and no progress.	Not Achieved
XIV - 31	Island Health continue to support regional and local governments in providing education and resources to private residential systems.	Island Health participates in WellSMART, an education program for private well owners in the Regional District of Nanaimo. Since 2012 – 14 workshops have been given with a total of 345 participants.	Ongoing
XVI - 32	The Provincial Health Officer be requested to revisit the current format of the annual drinking water report and to consider including province-wide reporting on more aspects associated with the Source to Tap oversight and actions under the Drinking Water Protection Act.	A revised set of indicators has been developed and should form the basis for future reports.	Completed

HIGHLIGHTING SUCCESS STORIES

1 DROUGHT RESPONSE

Early in 2015, provincial assessment escalated the drought threat on the Island such that concern was expressed for continuity of drinking water supplies. Many local governments were immersed in provincial emergency preparedness activities. Water supply systems not operated by municipal or regional governments were not participants in this provincial process. Island Health staff engaged larger water supply systems in a drought threat assessment process, supported water conservation efforts that saw daily demands reduced by up to 40% in some communities, and provided materials to support smaller water supply systems that might also be affected by drought conditions. While systems expressed considerable concern, only one system that began annually having water shortages prior to the drought was unable to sustain a continuous supply. Many water supply systems updated their Emergency Response Plans to incorporate reaction to drought situations and some added new sources to expand access to supply.

2 Governance Change in Support of Improved Water Quality

Small water supply systems that transferred their governance to Regional District oversight as a step in improving water quality and developing long-term solutions included:

Cowichan Valley Regional District:

- 2008 – Lambourn Estates; 2010 – Arbutus Ridge, Bald Mountain, Dogwood, Douglas Hill; 2013 – Carlton, Shellwood; 2014 – Burnum, Woodley Range.

Regional District of Nanaimo:

- 2011 – Whiskey Creek; 2014 – Westurne Heights.

Alberni Clayoquot Regional District:

- 2012 – Beaver Creek.

Comox Valley Regional District:

- 2010 – Royston Improvement District.

3 Change of Source

Water supply systems can sometimes resolve treatment issues by modifying their source.

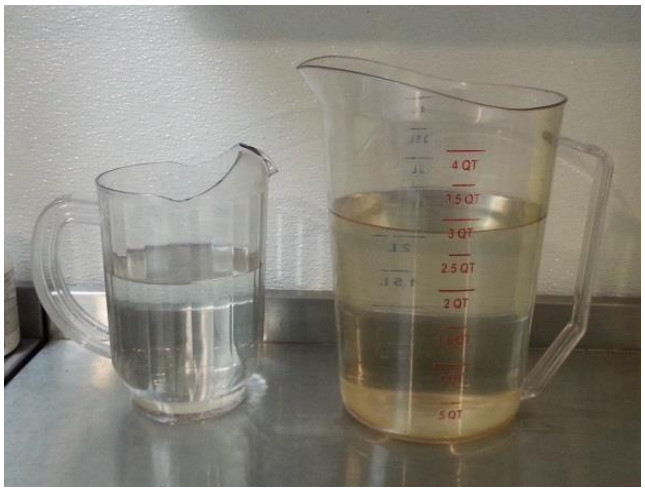
Shawnigan Lake School switched their source from surface water to ground water and constructed a well.

The Beaver Creek water supply system outside of Port Alberni, that routinely required public notification, implemented a definitive solution by changing their source from an intake in Beaver Creek, to receiving water from the Port Alberni system.

The picture on the right shows the new well that the Village of Tahsis constructed in order to come into compliance with SWTO by moving away from surface water supply.

Source: Island Health Staff Photo

4 Treatment Improvements

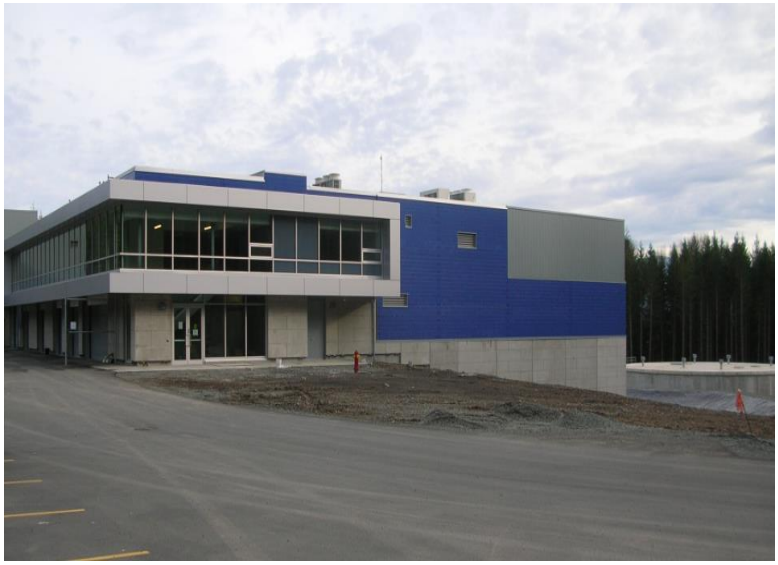


A small water system operator for the Mt. H'Kusam View Lodge, located in the Village of Sayward, sourced their water from a small creek and was only using ultraviolet light to disinfect the water. During significant rainfall events the system would routinely have a noticeable change in the colour of its water. Recently completed upgrades to the water system allowed the operator to meet the SWTO and the results were noticeable. The jug on the right shows the water before the completed upgrades, whereas the jug on the left is the water afterwards.

Source: Island Health Staff Photo

Race Creek had been on a long-term BWN for 11 years and the problem was resolved through proper treatment processes in 2015. Critter Cove, a remote resort in west coast Nootka Sound, is another water system that came into compliance with SWTO and came off BWN due to implementation of proper treatment methods.

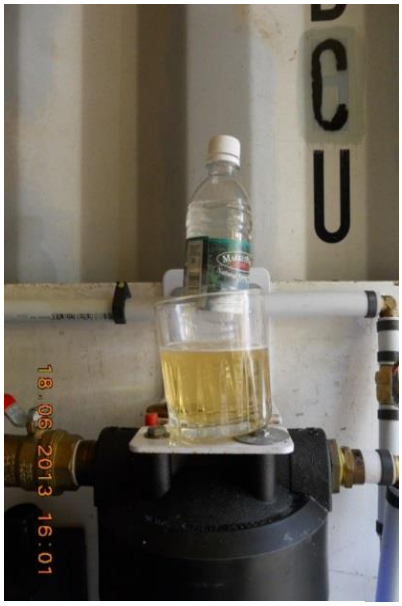
The City of Nanaimo's water filtration plant had been under construction since 2013 and was nearly a year delayed in start-up. Amid a significant precipitation event and facing water quality problems, Island Health worked with the City to issue a temporary operating permit; not only to prevent another boil water situation, but also to accelerate the commission of a state of the art ultrafiltration facility. The picture on the right shows the completed facility.



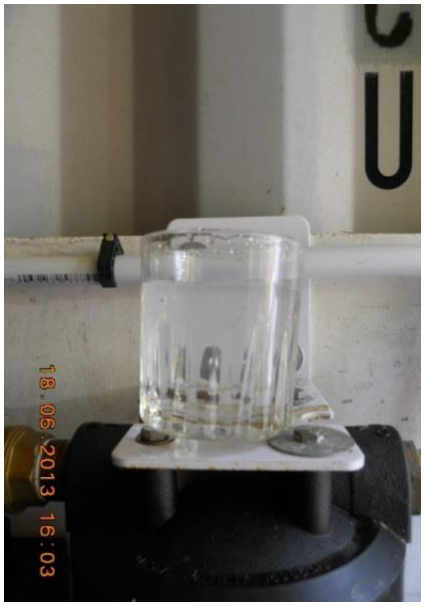
Source: Island Health Staff Photo

Risk reduction can sometimes be achieved even where full compliance with treatment objectives has not become a reality. Port Alberni, Ucluelet and Brown's Bay turned on ultraviolet reactors to augment primary disinfection by chlorination. This provides a level of safety while future filtration technology is selected, designed, constructed and commissioned.

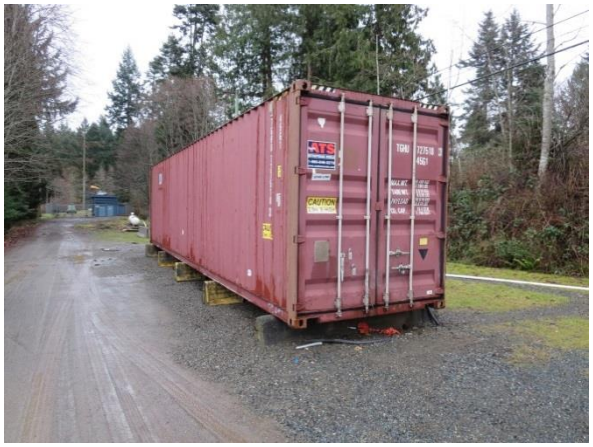
In March 2015 St Mary's water supply system on Saltspring Island received a public mandate through plebiscite for their borrowing plan after three previous assent processes did not pass.

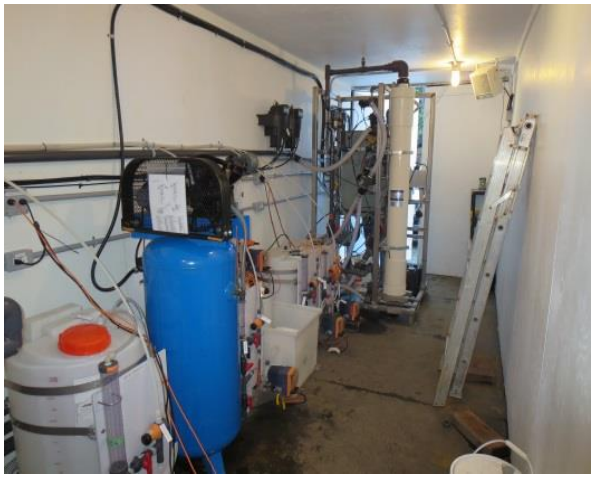


Pierre's at Echo Bay is a northern remote facility. The before picture on the left depicts a common problem for surface water supplies in the northern part of Island Health - high colour from suspended organic matter often referred to as "cedar water." In order to address an issue like this so that drinking water can be properly treated, water suppliers can install specialized filters to remove the colour, shown in the after picture on the right.



Source: Island Health Staff Photos





Source: Island Health Staff Photo

English River Water Service (ERWS) commissioned the design, manufacture and construction of a 2-stage primary and secondary pressurized ultrafiltration membrane with a total of five treatment trains. The ERWS is a joint venture between the City of Parksville and the Regional District of Nanaimo (Nanoose service area) to provide water to the region and to meet SWTO. Once completed, the system will produce 16,000 m^3/day to meet current demands and is expandable to meet future needs of 48,000 m^3/day.

The pictures on the left show a mini-treatment plant at the present water intake site, and is part of a three month pilot study underway to determine the ultrafiltration membrane's capacity to meet SWTO.

At the end of 2015 the City of Parksville and ERWS received an 80% public approval mandate to borrow funds to implement this long-term definitive solution for some 20,000 residents.

5 Successful Infrastructure Grant Funding Efforts

Many municipal government systems apply for community infrastructure funding to support needed water system treatment improvements. Two recent successes include the ERWS and the City of Parksville (above) and the Village of Sayward. Both communities anticipate meeting treatment expectations in part or wholly because of these federally supported resources. The actual funding is administered provincially. Other recently successful systems include Whiskey Creek and Ucluelet. In addition several communities are being proactive and have started asset mapping to determine longer term needs.

Between March 2015 and May 2017 The Clean Water and Wastewater Fund joint initiative between BC Provincial Government and Government of Canada awarded additional infrastructure dollars to the following communities: Regional District of Nanaimo for the San Pareil Water Treatment Plant, Town of Ladysmith, Lake Cowichan, Town of Port McNeill, Alberni Clayoquot Regional District for the Bamfield Water Treatment Facility, Capital Regional District for Port Renfrew, Comox Valley Regional District for Comox Valley and Courtenay – Black Creek Oyster Bay, Cowichan Valley Regional District for the City of Duncan, Cumberland, Mount Waddington Regional District, North Cowichan for Crofton, Port Alberni, Port Alice, Port Hardy and Qualicum Beach. Included in these projects will be treatment solutions for San Pareil, Ladysmith, Lake Cowichan, Bamfield and Cumberland.

SUMMARY

Since March 2012 the drinking water program has made significant strides in addressing drinking water quality and the overall management of the Drinking Water Program. The provincial initiative to develop additional indicators should provide an incentive for the collection of benchmark metrics and add a more rigorous comparison of progress. Aligning Island Health data collection with provincial indicators will better facilitate routine program reporting both locally and provincially.

As water supply systems progress to implement needed improvements, there are many successes that can be highlighted. Nevertheless, there are some situations where education and voluntary compliance activities have not been successful. In such cases, stepped up enforcement actions have been applied and will be escalated through progressive measures if necessary and until compliance is achieved. Providing oversight to all water systems will require sustained effort, but these efforts will ensure that all users of water supply systems share a common value in having safe quality drinking water. Provincial support and direction should further inform smaller water supply systems of legislative requirements and help them to move forward in identifying definitive solutions for their water system issues.

Information management remains a major barrier for the Island Health Drinking Water Program in meeting the expectations of a variety of audiences, and resolving these issues will be paramount to attain the objectives of our program. Recommendations surrounding essential improvements to the data management system, Health Space, have been largely unaddressed. The main challenge is that program staff are limited in the changes that can be requested of Health Space. It is a proprietary data management program with limited flexibility at the Health Authority level, and this is compounded by the lack of the development of a provincial standardized IM/IT solution.

One prevailing issue is the lack of integration between distribution, storage and overall asset management for water supply systems, and this will need to be addressed. Significant numbers of systems have aging infrastructure that will require either upgrading or replacement in upcoming years.

The program has enhanced its effectiveness and credibility by being active in educational opportunities, by supporting the development of resources, and by responding to emerging issues. Central to long-term success is having the public recognize that EHOs, acting on behalf of MHOs, are a resource for water supply system operators and the public to call upon, and depend upon, for assistance when needed - be it for education or intervention.

A progress update would ideally take place when the PHO releases data on the new monitoring benchmarks. This data set would allow for Island Health metrics to be both validated and contextualized.

NEW RECOMMENDATIONS

33 The program should develop an indicator for monitoring progress in adherence to treatment expectations for smaller water systems and report on this indicator annually.

34 That success stories on addressing small water supply system issues be communicated to operators and the public.