Area ‘A’ Water Master Plan

Update 2011

Prepared by the Sunshine Coast Regional District
Infrastructure Services Department
Updated November 2011

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2011 Update

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ACKNOWLEDGEMENT

This document is primarily the outcome of the collaboration between SCRD staff and the major stakeholders, as facilitated by Mr. Steve Lee, MBA, P. Eng.

Stakeholder input has been provided by:

- Tim Adams, Drinking Water Officer, Provincial Health Authority
- Julia Berardinucci, Regional Manager (Water Stewardship) Ministry of Environment
- Tim Bennett, (Water Stewardship) Ministry of Environment
- Dave Nanson, Regional Biologist Department of Fisheries and Oceans
- Jordan Louie, Sechelt Indian Band
- Louise Todhunter, North Pender Harbour Water Service Area Advisory Committee
- Ryan Logtenberg, Area A Advisory Planning Commission
- Barry Wilbee, Area A Alternate Director SCRD
- Eric Graham, Area A Director SCRD
- Technical input has been provided by SCRD staff: Bryan Shoji, General Manager Infrastructure Services, Dave Crosby, Manager of Utility Services and David Rafael, Senior Planner.
- Administrative support has been provided by Joanne Bullock.

Steve Lee, MBA, P.Eng
Consultant
October 2011

1. Background

This document provides an update to the 2007 edition of the Area A Water Master Plan (AAWMP or "the Plan") to make the Plan current to September 2010. The update captures the thoughts of, and dialogue between, SCRD staff and the major stakeholders. For more detailed background information readers should refer to the 2007 edition of the AAWMP.

1.1 2007 Initiative

With a strong mandate from the Community a select group of knowledgeable individuals representing both the Non-Governmental Organizations and Public sectors completed the Plan in early 2007. The Plan establishes general directions to address drinking water issues in Area A and provides a general framework to improve the systems to achieve the overall objectives.

1.2 2007 Business Environment

The business environment in 2006/2007 was most dynamic to say the least. The impetus to develop a Master Plan was provided by the following conditions:

- Environmental Appeal Board (EAB) ruling (2007 AAWMP, SCRD) on the Hotel Lake Water Application made certain demands of the SCRD, including developing a master plan.
- Considerable portion of the area residents were dissatisfied with the quality of drinking water supply and were also concerned with the environment and eco-system as the community grows.
- Water systems were generally sub-standard and systems were not developed on the basis of long range planning and comprehensive scientific analysis. Moreover, changing provincial standards and Drinking Water Officer (DWO) expectations require major upgrading to the water systems.
- Economic boom and projected near term new growth warranted immediate expansion in infrastructure. The Community, however, anticipated severe difficulties in funding major capital upgrades required to meet new standards and DWO expectations.
- The General Strategic Priority Funding (GSPF) program (from the Gas Tax revenue), Municipal Rural Infrastructure Fund, Green Municipal Fund, and Build Canada Fund grant programs were launched by the Federal and Provincial Governments to promote upgrading of infrastructure thus provided funding opportunities leading to a positive outlook.

1.3 2007 Objectives

The objectives in the 2007 Plan can be summarized as follows:

- Pursue water quality, environmental protection and system sustainability, including compliance with provincial regulations, EAB and DWO requirements
- Plan and design systems on the basis of science.
- Seek external funding and reduce cost to customers.
- Maintain adequate communication with the public.

1.4 Significant Events (2007 – 2009)

Since the adoption of the AAWMP, several significant events occurred, including but not limited to the following:

- The SCRD made separate applications to the three major funding programs in early 2007 for the AAWMP projects as a group. A total of over 2.8 million dollars was awarded to the SCRD for the improvements.
- In 2007, members of the South Pender Harbour Water District (SPHWD) voted in favour to convert the Water District to a Regional District service. The conversion process was completed in mid 2008.
- World wide economic downturn affected local economy.
- The SCRD made applications to construct water treatment plants for North Pender Harbour Service Area and the South Pender Harbour Service Area under the Building Canada Fund (BCF), a funding initiative launched by the Federal/Provincial Government in 2008. A grant in the amount of $4.08M was awarded to the SCRD for the construction of a water treatment plant in South Pender Harbor and the installations of water meters.

1.5 2007 Program Status

The Tasks identified in the 2007 Plan include Grant Applications, Scientific and Feasibility studies and construction projects to address water supply and quality issues. Since then 38 of the 44 tasks have been addressed and/or completed. (See figure 1)

2007 AAWMP projects status (FIGURE 1)	
Initiatives (2007 AAWMP)	**Status (May 2009)**
Applications	
A1 - Grant funding application to FCM's Water RFP	Completed - 2006, approved $1.0m, contract pending
A2 - Grant funding application to Canada-B.C. Municipal Rural Infrastructure Fund	Completed - 2006, application unsuccessful
A3 - Application for 14 M gal from Hotel Lake	Completed - 2006, license refused
A4 - Application for 25 M gal annual extraction from Garden Bay lake	Completed - 2006, approved 2007
A5 - Sakinaw Lake water license application	Completed - 2007
A6 - Grant funding application to Provincial Infrastructure Planning Grants Program	On-going project, specific pursuits
A7 - Grant funding application to University research programs (e.g. NSERC)	**Future initiative**
Implementations	
I1 - Implementation of GBWWD/HL system integration	Completed - 2007, improvements incorporated in annual program
I2 - Potential SPHWD/NPHWSA amalgamation	WTP Feasibility Study recommended not to amalgamate at this time
I3 - Implementation of SPHWD/NPHWSA system integration	Analysis completed, decision not to proceed
I4 - Potential SPHWD/NPHWSA amalgamation	Analysis completed, decision not to proceed
I5 - Replacement of distribution system for Egmont water system	Construction in 2009, GSPF funded
I6 - Water mains extension to service Jervis Inlet Rd. and Earl's Cove Rd.	Construction in 2009, GSPF funded
I7 - Transfer of assets from Clearwater Utilities to the SCRD	SCRD analysis complete, proponent discontinues initiative
I8 - Water mains extension to service N & S Oyster Bay	Construction in 2009
I9 - Water mains extension to service residents of Middle Point area	Preliminary analysis in 2009, proposal made by SCRD has not been accepted, no action expected

Water Quality	
Q1 - GBWWD/HL UV treatment	To be implemented as part of the proposed WTP, as per BCF Grant application
Q2 - Water treatment plant construction for SPHWD/NPHWSA	$4.06M grant funding under BCF program approved in 2009, engineering design in progress for 2011 construction
Q3 - New treatment facility for Egmont water system	Construction in 2010, GSPF funded
Q4 - **New UV disinfection system for Cove Cay system**	**Future initiative**
Q5 - New treatment facility for Pender Harbour Secondary School	Completed - 2011
Studies	
S1 - Hotel Lake Hydrologic Study	Completed – 2007
S2 - Mixal Creek Hydrologic Study	Completed – 2007
S3 - Garden Bay Water Balance Study	Completed – 2006
S4 - Sakinaw Lake Hydrologic Study	Completed – 2006
S5 - GBWWD/HL system integration study	Completed – 2008
S6 - Water treatment plant feasibility study for NPHWSA	Completed – 2008
S7 - **Development of drinking water source protection program**	**TBD**
S8 - SPHWD/NPHWSA amalgamation feasibility study	WTP feasibility study recommended two separate service areas
S9 - SPHWD Source to Tap Study	Completed - 2007
S10 - SPHWD feasibility study for alternative supply options	Not initiated, S to Tap study established that current water supply source is adequate
S11 - SPHWD feasibility study for new water treatment plant	Completed - 2008
S12 - Preliminary feasibility studies for SCRD takeover of community systems	No current requests
S13 - Final feasibility study and design work for Egmont system upgrades	Completed - 2008
S14 - Final feasibility study of mains extension to service Jervis Inlet Rd.	Completed - 2008
S15- Final feasibility study of SCRD takeover of Dream Valley	(See I 7) Proponent discontinued pursuit

S16 - Final feasibility study of mains extension to service N & S Oyster Bay	Completed - 2008
S17 - Feasibility study of options for improving water quality at PH Secondary School	(See Q 5) Assessment to be conducted in 2011
S18 - Feasibility study of mains extension to service Middle Point area	Completed - 2010
S19 - Feasibility study for new function to support long term source development research	Study completed, pending referendum
S20 - Sakinaw basin data collection and motoring/modeling program	**Pending completion of S19**
S21 - Sakinaw Basin adaptive management study	**To be considered after adequate data has been collected**
S22 - Development of ground well inventory	Existing data on water quality deemed ground water in this area nit feasible for community water supply. Data is academic.
S23 - Aquifer Mapping	Same as S22
New/additional initiatives	
BCF grant applications	Completed - 2008
SPH conversion	Completed - 2008

2. 2011 Update

As stated in the 2007 Plan, the Master Plan should be updated on a regular basis particularly when considerable changes have occurred in the business environment since the completion of the Plan.

2.1 Participants - The Core Planning Group (CPG)

In view of its positive dynamics, many of the original participants in the 2007 Master Plan were invited to participate in this update. The CPG represents a diverse group of stakeholders, as follows:

- Provincial Health Authority (Tim Adams, DWO)
- Ministry of Environment (Julia Berardinucci, Regional Manager, Water Stewardship, Tim Bennett, Section Head, Water Allocation, Water Stewardship)
- Department of Fisheries and Oceans (Dave Nanson, Regional Biologist DFO)
- Sechelt Indian Band (Jordan Louie, absent)
- North Pender Harbour Water Service Area (NPHWSA) (Louise Todhunter, member NPHWSA Advisory Committee)
- South Pender Harbour Water Service Area (SPHWSA) (Richard Frappier, absent)
- Advisory Planning Commission (Ryan Logtenberg)
- Sunshine Coast Regional District (Dave Crosby, Manager of Utility Services)
- SCRD (E. Graham, Area A Director and B. Wilbee, Area A Director Alternate)

2.2 Process

SCRD Administration advocated a simple and concise update of the document. Using the 2007 Plan and Program Status as a starting point, the CPG engaged in a positive dialogue at a meeting(s) on 14 May 2009. (Appendix 1- Minutes of meeting on 14 May 2009 including powerpoint presentation) The Group focused generally on:

- System, science-based (knowledge, belief and truth) and big-picture thinking (aware of internal and external factors);
- Business environment, short and long term issues in drinking water supply;
- Opportunities, challenges, objectives and strategies; and
- Changes and adaptations required to render the system and services sustainable

2.3 Plan Objectives

The objectives established in the 2007 Plan are generally still valid. Strategies to adapt to the current business environment were discussed and the following objectives were re-affirmed:

A. Establish long-term water supply to accommodate the current and future needs of the communities in Area A while minimizing the impact on the lake systems and the local eco-system.

B. Provide high quality drinking water to the residents complete with multi-barrier protection against contamination.

C. Plan and manage the delivery of service in a cost effective, fair and equitable manner.

D. Maintain open communication and assist all Area A residents in addressing drinking water issues.

2.4 2009 Business Environment

With the economic downturn, decline in housing and construction markets, the 2009/2010 business environment appears to be considerably different from 2007. The main elements are:

- Community continues to demand good drinking water, and concerns for the environment and the eco-system remain a high priority.
- It is generally agreed that there is abundance of surface water supply to support the current and future population in the Area. Ground water has also been identified as a potential source of community water supply. While well water may have less particulates, arsenic contamination has been identified as a common occurrence in the Area.
- With the conversion of SPHWD in 2008, the SCRD has taken on the role as the main steward for drinking water supply in the Area. Integrity of most of the infrastructure in the Area is now being addressed in the development of the SCRD's 10-Year Plans.
- Drinking Water Officer has stated in his annual Inspection Reports (Appendix 2) that water treatment systems with multi-barrier protection are required for SPHWSA, NPHWSA, Cove Cay and Egmont.
- Due to the small market base, customers will continue to experience difficulties in funding major capital upgrades required to meet new standards and expectations. Economic recession has also caused significant changes in the money, housing and construction markets.
- Meaningful data to support scientific hydrologic studies remains inadequate.

- Federal and Provincial Government have launched major funding programs to stimulate the economy. Competition for such funding, however, remains extremely high.
- The Federal government has also launched “short notice” funding programs to stimulate the economy. Only projects that are “shovel ready” are being considered in this.
- NPHWSA operating requirements exceeded original projection in the Conversion Study. Operating costs for all systems will rise as systems are improved and will most likely become an on-going concern for all customers.
- Acceptance of certain Federal and Provincial funding (BCF and GMF) commits SCRD to a progressive water conservation program.
- **OCP and Planning Considerations**
    - Build-out capacity, as outlined in the current Official Community Plan for the Area has not changed since the 2007 Plan. While potential increase in residents in the area may be significant, actual trend of growth in the area has been relative stable. There may be spikes in annual growth rates, long-term trend however appears to be relatively stable at the 1.0% - 1.5% range.
    - Actual growth rate is typically a function of the general state of the economy, real estate values, employment rate in the area, regional growth strategy, demographic characteristics, transportation and other services, etc. While annual growth rates may fluctuate, rapid change in long-term trend is not expected, particularly within the planning horizon of this document.
    - Water demand is typically a function of population, climate, water conservation measures, quality of water, system expansion, etc. For the purpose of this edition of the AAWMP, it is assumed that demand management efforts will mitigate some of the increase due to population growth. The key, however, is to maintain meaningful data and be adaptive to changes and unforeseen circumstances.

2.5 Opportunities and Challenges

The new business environment provides the following opportunities and challenges:

2.5.1 Opportunities:

- In the spring of 2008 the Federal Government launched the Building Canada Fund program to stimulate the economy and strengthen Canada’s infrastructure. SCRD submitted two applications under this program for

the construction of water treatment plants for the NPHWSA and SPHWSA respectively. A grant of $4.06m was approved for the construction of a water treatment plant for the SPHWSA was approved in 2009.

- Construction tenders in early 2009 have shown a considerable drop in construction prices. This appears to be an excellent time to undertake major construction.
- The current low interest rate is at all time low and is ideal for debt financing major capital projects.
- As the largest lake and watershed in the Area, Sakinaw Lake provides potential long-term supply and a great alternate source as a means to reduce environmental impact. The response from Ministry of Environment to SCRD's 2007 application for a (11.0 million gallon) water license was that there appears to be adequate water but SCRD must address issues raised by DFO and residents on the lake.
- The $1.0 million Green Municipal Fund and the $1.0 million Low Interest Loan approved in 2007 may provide 50% of the capital costs for water conservation improvements and water treatment plant design for both N & S Pender Harbour. An Alternate Approval process was successfully conducted in 2009.
- Federal/Provincial funding agencies demand water conservation, reward good management and encourage preparedness for construction.
- Harris Lake has been identified as a potential source of additional supply for South Pender Harbour Water Service Area (SPHWSA).

2.5.2 Challenges:

- A significant supply (McNeill Lake) capacity issue for the SPHWSA system surfaced in the peak season in 2008. This will need to be addressed in the immediate future. The issue was not identified in the capital plan in the Source to Tap Report.
- In July of 2009, SPHWSA also encountered severe poor water quality issues that resulted in the issuance of a Water Quality Advisory by the DWO.
- Lack of credible scientific data for most of the watersheds in Area A will continue to cast uncertainties in hydrologic analyses
- Due to the recent economic downturn, difficulties in tax-based funding will likely continue.
- Funding for major capital construction will continue to be an issue for the water service areas.
- Limited staff resources will continue to be a challenge in managing the systems.

2.6 Strategies

The following strategies will help design a program to achieve the objectives in this Plan:

- **Diversify Supply Sources**. This will ensure long-term supply capacity thus enabling the community to develop in accordance with the OCP. This will also provide the water purveyors with directions to manage the water supply so as to minimize impact on lake systems. Furthermore, this will enable purveyors to better manage (natural or accidental) bad water situations.
- **Protect Watersheds**. Watersheds are essential assets and resources supporting the community water supply and the eco-system. Damages to the watersheds will compromise the quality of such co-existence. Studies have identified that wildlife, human (septic, recreation, transportation, etc.) and industrial (logging, mining, etc.) activities are high risk activities in damaging the watersheds. Although standards and regulations are in place to protect the watersheds from such activities, competing interests often result in sub-optimization. Careful monitoring of on-going activities should be conducted to prevent undue damage to the watersheds.**Adopt Demand Management Policies.** Demand Management programs will help to reduce per capita consumption, thus improving sustainability of the systems and supply sources. This will also qualify the SCRD to pursue Federal and Provincial funding.
- **Establish Appropriate Service Levels.** In the context of water supply, services include supply management, water treatment with multi-barrier protection, fire flow distribution, back-flow prevention, regular testing, reporting, monitoring. Establishing service levels to meet the requirements of the DWO and Health Regulations will ensure water quality, and will qualify purveyors for Federal/Provincial grant funding.
- **Interim Water Quality Improvement for SPHWSA.** In light of the raw water quality issues to be addressed by the SPHWSA annually, construction of a water treatment plant is being noted as a high priority initiative. While design and construction are being pursued, interim measures in water quality improvement has been recommended by the DWO.
- **Improve watershed monitoring and related data collection.** This will enable scientists and engineers to conduct more credible analyses and provide better engineering designs.
- **Optimize Grant Funding Opportunities**. This will reduce overall costs to the water customers and advance the implementation of major infrastructure upgrades.

- **Establish Regular Communication Channels**. This will keep the communities informed and facilitate the residents to provide input to the SCRD regarding drinking water issues.

2.7 Programs and Projects

The programs, projects and tasks presented below are intended to be recommendations to be considered in the capital and operating programs for the respective water purveyors and the SCRD as appropriate.

Objective: A. Establish long-term water supply		
Strategies: Diversify Supply Sources Improve watershed monitoring and related data collection Adopt Demand Management policies		
Tasks	**Est. Cost $**	**Schedule**
A-1 Sakinaw Lake water license application	50,000	With Province
A-2 Conduct watershed monitoring program as either a tax based initiative (pending referendum) or water user fee based program for the benefitting service areas	112,000	2013 annually
A-3 Conduct Adaptive Management study of Sakinaw Basin	tbd	2020
A-4 Conduct hydrologic study on Harris Lake	30,000	2013/2014
A-5 Conduct hydrologic analysis and feasibility study on transferring water among different watersheds, e.g., Klein, Ruby, Sakinaw, etc.	60,000	2015

Objective: B. **Provide High Quality Drinking Water**		
Strategies: Comply with standards and DWO Requirements Diversify Water Supply Source		
Tasks	**Est. Cost $**	**Schedule**
B-1 Incorporate DWO recommendations in respective 10-yr plans	N/A	2012
B-2 Conduct WTP design for SPHWSA	550,000	2011
B-3 Construct WTP for SPHWSA and implement interim water quality improvement measures	4,000,000	2012
B-4 Conduct UV treatment design for NPHWSA	50,000	2011
B-5 Construct UV treatment for NPHWSA	300,000	2012
B-6 Extend water main to Middle Point area	2,400,000	tbd

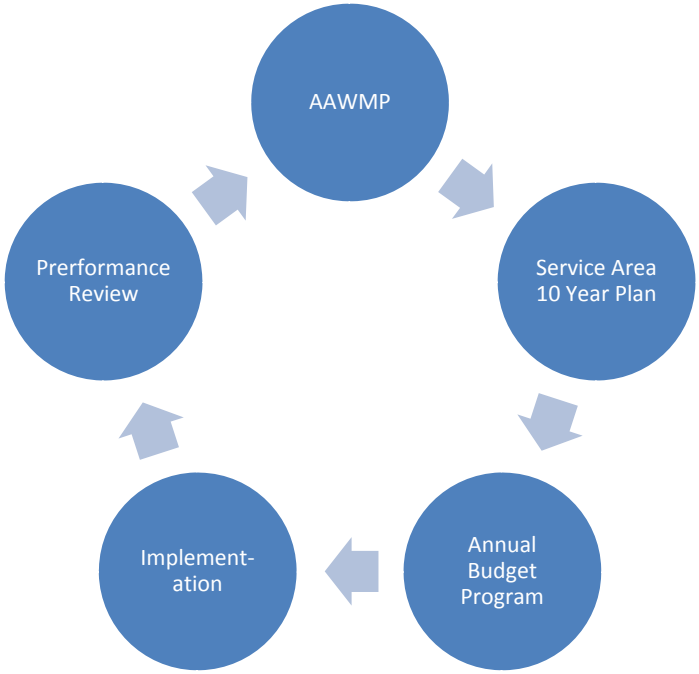
Objective: C. Provide Cost Effective Services		
Strategies: Optimize Grant Funding Opportunities Adopt Demand Management Policies		
Tasks	**Est. Cost $**	**Schedule**
C-1 Grant application for WTP design for SPHWSA (see B 2)	N/A	
C-2 Grant application for WTP design for NPHWSA (see B 4)	N/A	
C-3 Finalize GMF funding and loan agreements		Completed - 2011
C-4 Make applications for Federal and Provincial funding		On-going
C-5 Implement metering program and meter rates	840,000	2012 - 2013
C-6 Implement Low Flow Fixture Replacement Program	840,000	2012 - 2013

Objective: D. Maintain Communication with the Community		
Strategies: Establish Regular Communication Channels		
Tasks	**Est. Cost**	**Schedule**
D-1 Maintain Public Advisory Committees as appropriate		On-going
D-2 Invite stakeholder representation to planning meetings		On-going
D-3 Post relevant documents on SCRD website		On-going
D-4 Conduct Open Houses for major initiatives as appropriate		On-going

3. Conclusion

Given the current business environment, the Stakeholder Group resolved, as strategies of this phase of the Master Plan, to pursue alternate supply sources, watershed monitoring and data collection, quality service level, demand management policies, Federal/Provincial grant funding (including preparedness to construct water treatment plants) and enhanced communication programs.

The programs and projects identified in this Plan reflect an overall funding requirement of 8 to 10 million dollars in construction and operating (for the next 10 years or so) in order to achieve the objectives of the Plan. The initiatives identified are by no means exhaustive and prescriptive. They are intended to be recommendations to the various water purveyors to be considered in their respective water system (capital and operating) planning. This Plan should be adopted as part of the following management model.



As the communities and business environment evolve, this Plan also has to evolve.

> "*The future is not some place we are going, but one we are creating. The paths to it are not found but made, and the activity of making them changes both the maker and the destination*"
>
> John Schaar, American Sociologist