



Alberni-Clayoquot Regional District

BAMFIELD WATER COMMITTEE MEETING

THURSDAY, APRIL 21, 2016, 5:30 PM

Bamfield Volunteer Fire Department Hall, 352 Pachena Road, Bamfield, BC

AGENDA

	PAGE #
1. <u>CALL TO ORDER</u> Recognition of Traditional Territories.	
2. <u>APPROVAL OF AGENDA</u> (motion to approve, including late items required 2/3 majority vote)	
3. <u>ADOPTION OF MINUTES</u> a. Bamfield Water Committee Meeting – February 12, 2016 <i>THAT the minutes of the Bamfield Water Committee Meeting February 12, 2016 be received.</i>	 2-4
4. <u>REPORTS</u> a. Memorandum Response to Water Treatment Facility Questions – R.Dyson b. Koers & Assoc. Preliminary Documents for consideration c. Bamfield Water System Preliminary Schedule d. Bamfield Water System Sampling History e. Sugsaw Lake Water Sampling Parameters and Results f. Bamfield Water System THM Testing <i>THAT the Bamfield Water Advisory Committee receives reports a-f.</i>	 5-10 11-17 18 19-20 21 22
5. <u>REQUEST FOR DECISION</u> a. Bamfield Waterworks Contractor's Agreement <i>THAT the Bamfield Water Committee recommend to the Alberni-Clayoquot Regional District Board of Directors enter into a contract with Les Butler to carry out the duties on the Bamfield Water system as an independent waterworks contractor at a rate of \$3,000 plus GST per month for a period of three (3) years ending April 30, 2019.</i>	 23-41
6. <u>LATE BUSINESS</u> (requires 2/3 majority vote)	
7. <u>ADJOURN</u>	

Alberni-Clayoquot Regional District

MINUTES OF THE BAMFIELD WATER COMMITTEE MEETING MEETING HELD ON FEBRUARY 12, 2016

Regional District Board Room, 3008 Fifth Avenue, Port Alberni, BC

MEMBERS

Keith Wyton, Director, Electoral Area "A" (Bamfield)

PRESENT:

Eric Clelland, Bamfield Volunteer Fire Chief

Lisa Herbig, Member at Large

John Mass, Advisory Planning Committee Chair

Barry Otterson, Bamfield Chamber of Commerce

REGRETS:

JP Hastey, Bamfield Marine Science Centre,

STAFF PRESENT:

Russell Dyson, Chief Administrative Officer

Andrew McGifford, Acting Manager of Finance/Manager of
Environmental Services

Daniel Fredlund, Maintenance Technician Leadhand

Les Butler (Contractor)

Chris Downey – Koers and Associates (Contractor)

GUESTS:

Dr Paul Hasselback, Island Health

Lynne McGee

Murray Sexton

Charlene MacKinnon

There were two members of the public attending by speaker phone and 11 members of the public in attendance.

1. CALL TO ORDER

The Chairperson called the meeting to order at 11:00 am.

The Chair recognized the meeting is being held in the Huu-ay-aht First Nation Territories.

2. APPROVAL OF AGENDA

MOVED: J. Mass

SECONDED: L. Herbig

THAT the agenda be approved as circulated.

CARRIED

3. ADOPTION OF MINUTES

- a. Bamfield Water Committee Meeting held January 18, 2016.

MOVED: J. Mass

SECONDED: L. Herbig

THAT the minutes of the Bamfield Water Committee Meeting held on January 18, 2016 be adopted.

CARRIED

4. REPORTS

Director Wyton provided an overview of the BWS, the size of the system, financial challenges and compared this to the costs and demands of other water systems.

Russell Dyson provided an introduction to the discussion it was at the request of the water committee that a review of the water treatment requirements and proposed treatment facility be provided.

Chris Downey explained the process to develop the detailed design for the water treatment facility; he explained the pilot treatment project and the results, which are available on line from the Regional District website. The projected capital and operating costs were reviewed. The system is designed based on projected community growth as prescribed in the Official Community Plan. The system would be modular so it can be expanded in size as demand requires.

Russell Dyson explained that operating costs are conservative best estimates; actual operating costs are recovered by tolls and are subject to review each year by the BWC.

Andrew McGifford described various scenarios for borrowing and the cost implications.

Dr. Paul Hasselback, Island Health Chief Medical Health Officer provided an overview of water treatment requirements in the province leading up to and after the establishment of the Drinking Water Protection Act. He stated that Bamfield has provided a lot of progress in the management of its water system recently, when this is the case there is less attention paid by regulators. He suggested that the Bamfield water system is #5 on the list of systems with water advisories, based on population and duration of the advisory. He respects that the community is small and has a modest tax base. While consumption averages are low there is a large peak demand with a higher seasonal population. It is up to the operator to design and implement appropriate solutions to meet the drinking water standards. Filtration is required for the Sugsaw Lake water supply; there is no evidence to suggest otherwise. Trying to avoid filtration is a risk.

Charlene MacKinnon stated that the actions of the ACRD to design and plan for water treatment has placed it ahead of the game.

Murray Sexton advised that the Dissolved Air Flotation (DAF) water treatment system is

common for similar water supplies and it has been very successful to treat similar water quality issues. He commented on the use of aluminum as a flocculant in the filtration process and indicated that aluminum levels leaving the plant are typically lower than the levels of untreated water.

Russell Dyson, CAO discussed two funding options to assist with the capital costs of the proposed water treatment plant. The Build Canada program will accept applications in April – the decision date for applications is unknown and once again the project will be competing against other proposals. Advice received to improve the application for the Build Canada criteria includes additional expenses and work including developing a water conservation strategy. Another alternative would be to seek allocation of gas tax monies from the Regional Board – approximately \$450,000 has been allocated to date – an additional \$600,000 would provide the 2/3 portion. Staff are of the opinion that the proposed water treatment facility should be implemented at the earliest opportunity. This is in response to a long standing water quality advisory.

There was discussion in response to questions from the committee members and the public, topics included logging practices and the potential impact to the water supply, alternatives to treat THM's – IH noted that point of use treatment is not viable for systems the size of Bamfield. IH stated in other provinces the conditions of the water in Bamfield would require a boil water advisory. IH advised there are many different engineered options, IH do not tell you what option to choose they will advise if the option you choose is acceptable based on the facts that you present – i.e. a pilot project. Effective UV treatment depends upon low turbidity levels as well as clear water quality. There was discussion about past water testing results and staff were asked to report back to the Committee at the next meeting.

5. ADJOURN

MOVED: L. Herbig

SECONDED: J. Mass

THAT this meeting be adjourned at 1:05 pm.

CARRIED

Certified Correct:

Keith Wyton,
Chairperson

Russell Dyson,
CAO

MEMORANDUM

To: Bamfield Water Committee

From: Russell Dyson, Chief Administrative Officer

Date: April 19, 2016

Subject: Response to Water Treatment Facility Questions

The following are answers to questions raised by the Bamfield Water Committee:

1. Watershed protection - this is an important aspect of water quality. This should not be lost in the treatment discussion. What tools are available to make improvements? The current Huuayaht FSP process is calling for public review. What role does ACRD have in this process, why have we not been approached as holders of a Community Watershed in their operating area. I have been told by Forest Practices Board staff that there are substantial tools at our disposal. This may not give bulletproof protection referred to by Dr. Hasselback but options should be explored.

Chris Downey, Koers

As noted by Island Health we agree that this should be done. With regards to timing this should be started when funds permit. It should be noted that even with a Watershed Protection Plan in place we do not expect Island Health will provide a filtration deferral and therefore water treatment plant with filtration would still be required.

Stephanie Bruvall Island Health

Regardless of whether a request for a filtration deferral request is going to be submitted (and my understanding is that it is not), source water protection is a key component of the Source-to-Tap approach to providing safe drinking water. Because the ACRD does not have control over the watershed for Sugsaw Lake, watershed protection planning will need to be a coordinated approach with all stakeholders involved. There are tools such as the *Comprehensive Drinking Water Source-to-Tap Assessment Guideline* that can help with this process.

Rhonda Morris FLNRO

The Sugsaw Lake watershed is a designated Community Watershed. Therefore Crown land forest tenure holders who hold Forest Stewardship Plans (FDP) must specify results/strategies within their FSP to meet gov't's legal objective regarding the management of community watersheds http://www.bclaws.ca/Recon/document/ID/freeside/14_2004#section8.2 .

The main crown forest tenure in the area is the HFN Forestry LP First Nations Woodland Licence N1A, held by Huu-ay-aht First Nation. In addition to the Crown land forest tenure, there is also Maa-nulth Treaty Settlement Lands and private managed forest land held by Island Timberlands. With regards to HFN's crown forest tenure, HFN has recently proposed amendments and an extension to their FSP which is available now for public review and comment until April 23rd. Comments on the plan can be provided directly to HFN Forestry LP. http://www.bclaws.ca/Recon/document/ID/freeside/14_2004#division_d2e6122

Morgan Kennah, Island Timberlands

Have provided a map with basic ownership between Island Timberlands, a First Nations Woodlot held by the HFN and treaty settlement lands. Basic areas are as follows:

- Total watershed area = 635 ha
- Operable Area = 565 ha
- ITLP = 107 ha
- Treaty Settlement Lands = 256 ha
- Woodlot = 202 ha
- Waterbodies = remainder

A water shed assessment is underway, approximately 2/3 complete. Island Timberlands is open to considering a presentation on the assessment to the Bamfield Water Committee once it is complete. Note this assessment is focused on forest manager needs and may not deliver the information the committee, or the ACRD more generally, is looking for. They could also deliver a more general natural without assessment-driven specifics.

Russell Dyson, ACRD

More involvement in the management of the water shed is possible, but will require resources with a financial impact to the community. We can explore this with the committee in the following months. I recommend we meet with the various interests to confirm options and seek their advice.

Andrew McGifford, ACRD

The HFN have considered being part of the water system as we progress to water treatment and with them as stakeholders in both the water system and the forestry operations in the watershed we should see a strong interest in ensuring water quality in the watershed.

2. The time pressure is not realistic. We have an almost all new membership on the advisory, we were unsuccessful in the Build Canada application and a substantial investment is being

contemplated. Caution and a conservative fiscal approach are warranted in view of the limited risks to health. That is not to say we want to sit on this forever but the preferred outcome would be broad support for an appropriate solution. This may take some time.

Stephanie Bruvall, Island Health

The water advisory committee (may have been different members) has been aware of the requirement to meet the *Drinking Water Treatment Objectives (microbiological)* for Surface Water Supplies since the Koers water system study was completed in 2013. The advisory for THM and HAA was also issued in 2013 and at that time the ACRD was asked to find a solution to address the THM/HAA levels. As the owner and operator of the Bamfield Water System, it is the responsibility of the ACRD, not the local water committee, to address the THM/HAA levels and to comply with the Drinking Water Treatment Objectives.

Russell Dyson, ACRD

It is the opinion of staff that the project should be implemented as soon as possible.

3. We need the historical testing data as laid out in the email to you from Rich Palmer.

Available data is attached as separate document. **Pages 19-22**

4. DAF waste- we need to resolve the question of waste volume and disposal costs with more accuracy. We can't afford to get this wrong in view of the financial implications. A truck in and out of Bamfield is a \$1000 bill. In Port Hardy the waste stream is sent into the waste water system. Is this a possible option for the planned Huuayaht waste water system that will transit our community if it is completed. Can we dispose of the water portion of the waste stream into Grappler Inlet? Are permits required and will they be granted? Chris mentioned a figure of 2% of process volume as waste. With 40,000 m3 annual throughput that is 800 m3. If it has to be trucked it will add up fast.

Chris Downey, Koers

Waste from the DAF plant can go to the HFN Waste Water Facility. The water portion cannot go to grappler inlet as it will contain some residual which will require further treatment. Our intention is to reintroduce that back into the headwaters of the plant mixing at a rate up to 10% of the incoming flow. With regards to trucking volume this will be hard to define however we have received a clarification email from the Corix (pilot study contractor) that they estimate 0.5% of the total flow to the float discharge with approximately 2-3% of that flow as solids. This equates to an estimate of 260 m3/year in the holding tank with 5-8 m3 as solid however to remove the solids from the 260 m3 would require further handling. Assuming a 13,000 litre (13m3) capacity truck this would be approximately 20 trucks a year.

Stephanie Bruvall, Island Health

With regards to the waste from the proposed water treatment plant; clarification would be

required during the design stage for the recycle streams of the various units to the head of the plant.

Russell Dyson, ACRD

Reasonable cost estimates have been provided based on the circumstances of the pilot project. Any updates reflected through the development and operation will be monitored and shared with the committee. We have advised HFN regarding the potential to connect to a sewer system if it is realized. Actual costs will vary depending on water quality – many factors beyond control.

5. Is there a way to scale down the size of the system? If it is truly modular we should not build much bigger than a modest increase over current demand. We have great hopes for Bamfield but we do not know what will happen. The current water demand is flat over the last few years. And we can do more from a conservation standpoint. We had a 38% population decline from 2006 to 2011. Indications are that the current census year will show another decline. In the Koers Bamfield Water Study 2013 the current peak population estimates are wildly inflated. With a permanent Bamfield population of 160 plus 100 accounted for by the Science Centre the peak seasonal population is estimated to be 1758. Tofino with a permanent population of 1800 has a maximum guest accommodation population of 1300. This is somewhat less than a 100% increase based on visitors. If we granted a 100% increase to Bamfield plus the Science Centre base it comes to 520. (160 + 100 X 2 = 520) The Study recommends that maximum daily flows in the summer be recorded to confirm the design projections of the report.pg 7 & 8 Section 3.2.1. This should happen this summer with applicable meters and recording devices employed.

Chris Downey, Koers

The treatment capacity could be reduced from 115 usgpm to 80 usgpm (2013 max day) however it would be in the \$25,000 – 75,000 range. The modular benefit occurs when adding a second tank as the second tank should not require a second residual handling system or air compressor or waste/rinse/clear well tanks.

Russell Dyson, ACRD

It is prudent to proceed with the capacity as proposed.

Andrew McGifford, ACRD

The cost savings from undertaking the plant in smaller components does not provide good long term value. Cost to rework once we have reached capacity would outweigh cost savings and if we want to provide the opportunity to share water and cost with HFN we would not be in a position to do so if we undersize the plant from the outset.

6. How can we share the capital cost load across the users in a fair manner? For example the Science Centre does not contribute anything to capital and yet they currently use 23% of total consumption. Larger commercial users have similar low capital contributions compared to the average householder that is largely carrying the capital burden. This needs to be addressed

regardless of the treatment plant outcome. Capital will need to be employed and the current allocation is not suitable.

Russell Dyson, ACRD

An alternative to secure a larger contribution to the capital costs from the Science Centre would be to request a donation. It is recommended that the ACRD Board Chair write to the head of the program to describe the value in the project, the interest to the Science Centre and make the request.

Staff have previously assessed the distribution of maintenance costs and are mindful of the Science Centre's potential ability to pursue their own water supply resulting in their operating contribution being lost or dramatically reduced. Taxes and tolls are a fine balancing act. They can be assessed in time as the treatment facility is operating and actual costs are realized.

Andrew McGifford, ACRD

Although the BMSC provide nothing in the capital contribution side of the tax and tolls budget they do ensure the operating revenue is sufficient to cover the operating cost associated with the BWS. Without the BMSC we would have to increase the quarter charges to cover just operations. The monthly tolls account to 24-27% of the revenue for the system if we look over the past few years. If we remove the BMSC from the revenue stem we still have costs to operate that have no impact on what volumes are processed through the system.

7. Is it possible to take a staged approach as referenced in the Koers 2013 study Section 4.4? The report notes there are several options to remove colour and TOC but only one approach was fully discussed in the report and only DAF was tested. The advisory members are still asking for a full review of the technical options and perhaps more tests will be needed to prove out different approaches.

Chris Downey, Koers

There is no simple method of reducing naturally occurring organic matter (disinfection by-product precursors) from potable water supply. Conventional treatment processes consisting of coagulation, flocculation, sedimentation/floatation and filtration can provide satisfactory removal. A process being used in a number of Vancouver Island water treatment facilities is dissolved air floatation followed by filtration. This treatment process has proven to be effective and competitively priced. Alternatively, the addition of activated carbon can also assist with the removal of organics. Ozone followed by biological filtration is also being used successfully to remove organics and colour. Direct filtration consisting of coagulation and flocculation followed by filtration (membranes or media) may also provide satisfactory removal of the disinfection by-product precursors. However, these processes can be more expensive from a capital or O&M consideration or less effective. That said, it is common practice to pilot test multiple treatment processes to determine which is the most effective treatment process for the communities specific water quality characteristics - as no two water sources are exactly the same.

Stephanie Bruvall, Island Health

Section 4.4 of the Koers study referenced a Phase 1 that included UV & Chlorine and a Phase 2 that included the DAF plant. You may want to gather additional information from Chris Downey for the advisory committee that clarifies why UV has been removed from the proposed treatment and why this particular phased approach is no longer being proposed.

Chris Downey, Koers

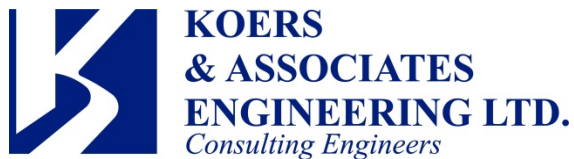
The proposed DAF treatment process will include UV disinfection. The UV reactor would be installed after the filtration media but before chlorine disinfection. Since the report was completed the ACRD has piloted the raw water and found that the raw water has a high colour and the UVT is approximately 50-55% UVT which is too low a value for a validated reactor.

***8. City of Brandon - Evaluation of Technologies for NOM Removal - XCG Consultants - With this news item I note the mention of chloramination as the preferred method based on bench scale tests. I am not clear yet why this would not work for Bamfield water and would it not be prudent to do the same kind of tests in our case? If we meet the turbidity standard, have two levels of disinfection, and reduce THM formation with chloramination why do we need filtration? If there is some concern about the light transmittance effects on UV disinfection related to dissolved organic could this not be checked out with testing to see if in fact there is an unacceptable performance. It may be more economical to boost the UV system performance to account for the lower transmittance of the water.
<http://www.xcg.com/evaluation-of-technologies-for-nom-removal/>***

Chris Downey, Koers

The main issue is the 50 - 55% UV transmittance of the water. Usually the lowest a manufacturer will validate a reactor is 65%UVT but this oversizing the reactor chamber. Therefore even if a filtration deferral was granted without a validated reactor a second disinfection process is required to meet the Health requirements of two treatment processes for surface water. Chloramination is a process after the required chlorine contact time that should reduce the DBP formation (THM and HAA) however it is not an additional form of disinfection but rather a modification (enhancement) to the chlorination process. Therefore an additional treatment process is still required to meet the 4-3-2-1 objectives.

TRANSMITTAL LETTER



PO BOX 790
194 MEMORIAL AVENUE
PARKSVILLE, BC V9P 2V7
FAX: 250-248-5362 TEL: 250-248-3151

Date: April 15, 2015

Job No: 1476

TO

Name: Russell Dyson
Firm: Alberni Clayoquot Regional
District
Address: 3008 5th Avenue
City: Port Alberni

FROM

Name: Chris Downey, PEng
Email: cdowney@koers-eng.com

Total number of pages including cover letter: 7

SUBJECT: BAMFIELD WATER TREATMENT FACILITY

Please see enclosed documents for consideration of project approval:

1. Preliminary Cost Estimate including Preliminary Operations & Maintenance costs.
2. Preliminary Location Plan for the proposed Bamfield water treatment facility.
3. Preliminary Water Treatment Equipment Layout Drawings.

Please feel free to contact me if you have any questions or concerns.

Chris Downey, PEng

Enclosures:

PRELIMINARY CONSTRUCTION COST ESTIMATE - CLASS C (+/- 30%)

**Bamfield Water Treatment Facility
Dissolved Air Floatation (DAF), Gravity Filtration (GF) & Ultraviolet Disinfection Equipment (UV)**



**KOERS
ENGINEERING LTD.**
Consulting Engineers

Project:
Client:

Bamfield WTP **Date:** 29-Jan-15
Alberni Clayquot Regional District

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION
1.0	GENERAL REQUIREMENTS				
1.1	GENERAL REQUIREMENTS	ls	1	\$50,000	\$50,000
2.0	SITE WORK				
2.1	SEDIMENT & EROSION CONTROL AND DEWATERING	ls	1	\$5,000	\$5,000
2.2	CLEARING & GRUBBING	ls	1	\$5,000	\$5,000
2.3	STANDARD EXCAVATION & DISPOSAL	ls	1	\$10,000	\$10,000
2.4	SITE GRADING & DRAINAGE	ls	1	\$25,000	\$25,000
2.5	PAVING & PAINTING	ls	1	\$30,000	\$30,000
2.6	HYDRAULIC SEEDING & SITE RESTORATION	ls	1	\$10,000	\$10,000
3.0	WATER TREATMENT FACILITY				
3.1	BUILDING STRUCTURE	ls	1	\$200,000	\$200,000
3.2	FOUNDATION PREPARATION FOR BUILDING	ls	1	\$15,000	\$15,000
3.3	HVAC & PERIMETER DRAINS	ls	1	\$25,000	\$25,000
3.4	SECURITY FENCING & GATE	ls	1	\$25,000	\$25,000
4.0	WATER TREATMENT EQUIPMENT				
4.1	DAF, GF, UV & CHEMICAL INJECTION EQUIPMENT	ls	1	\$430,000	\$430,000
4.2	BACKWASH, RINSE & FLOAT TANKS & PIPING	ls	1	\$40,000	\$40,000
5.0	MISCELLANEOUS WATER & STORM DRAINAGE				
5.1	INLET/OUTLET PIPING & VALVES	ls	1	\$25,000	\$25,000
5.2	RAW/TREATED WATER TIE-INS & PIPING/VALVES	ls	1	\$15,000	\$15,000
5.3	INSTALLATION OF TREATMENT EQUIPMENT	ls	1	\$20,000	\$20,000
5.4	PROCESS PIPING INSIDE WTP	ls	1	\$35,000	\$35,000
5.5	BOOSTER PUMP REPLACEMENT	ls	1	\$25,000	\$25,000
5.6	METER & FLOW CONTROL VALVE	ls	1	\$15,000	\$15,000
5.7	STORM DRAINAGE UPGRADES	ls	1	\$15,000	\$15,000
6.0	ELECTRICAL & CONTROLS				
6.1	ELECTRICAL & LIGHTING	ls	1	\$75,000	\$75,000
6.2	INSTRUMENTATION & CONTROLS	ls	1	\$40,000	\$40,000
6.3	CONTROL PANEL	ls	1	\$20,000	\$20,000
6.4	COMMISSIONING & TRAINING	ls	1	\$25,000	\$25,000
				SUB-TOTAL	\$1,180,000
				ENGINEERING & CONTINGENCY (30%)	\$354,000
				TOTAL ESTIMATED COSTS (EXCLUDING GST)	\$1,534,000

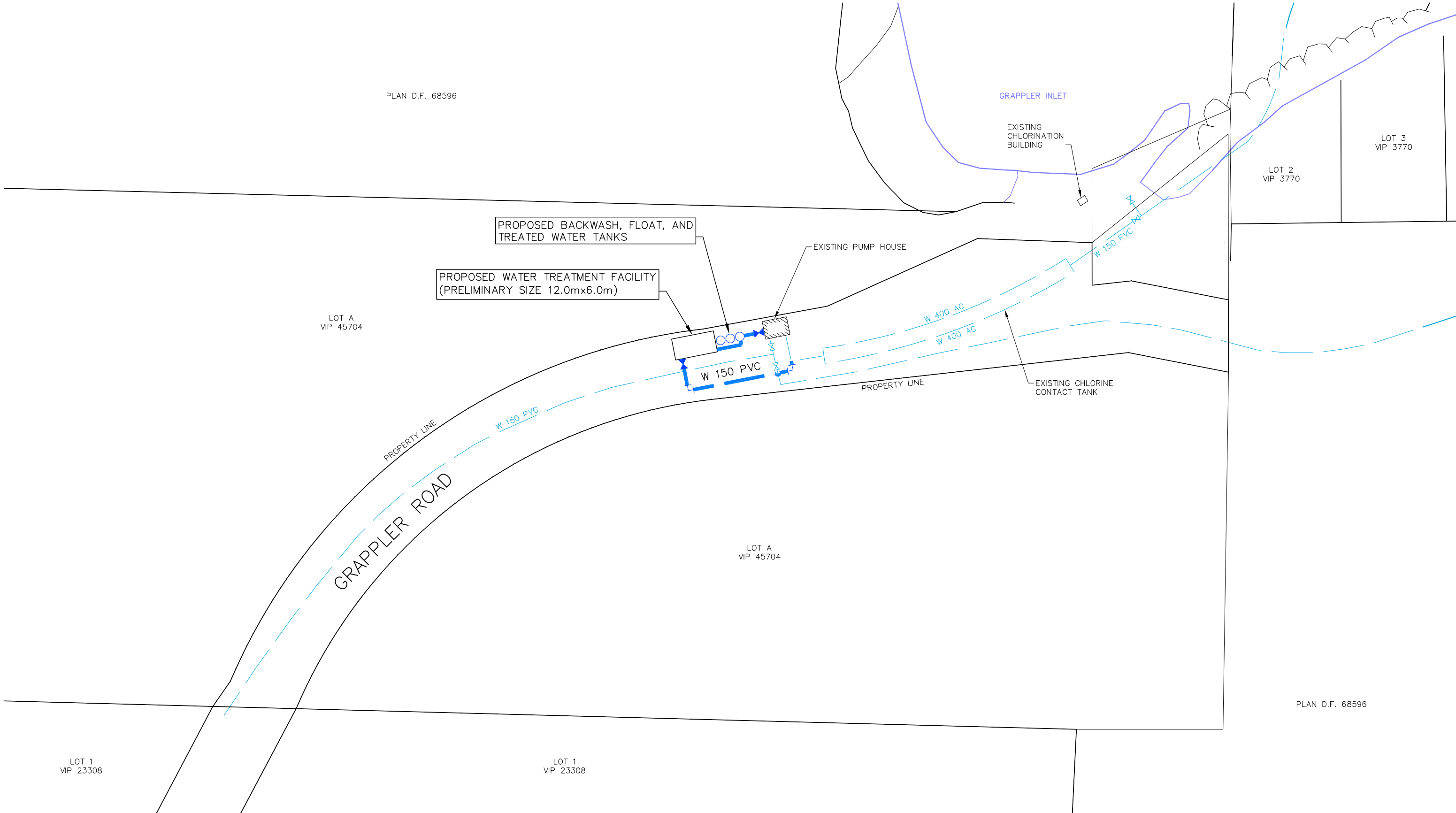
PRELIMINARY O&M COST ESTIMATE - CLASS C (+/- 30%)

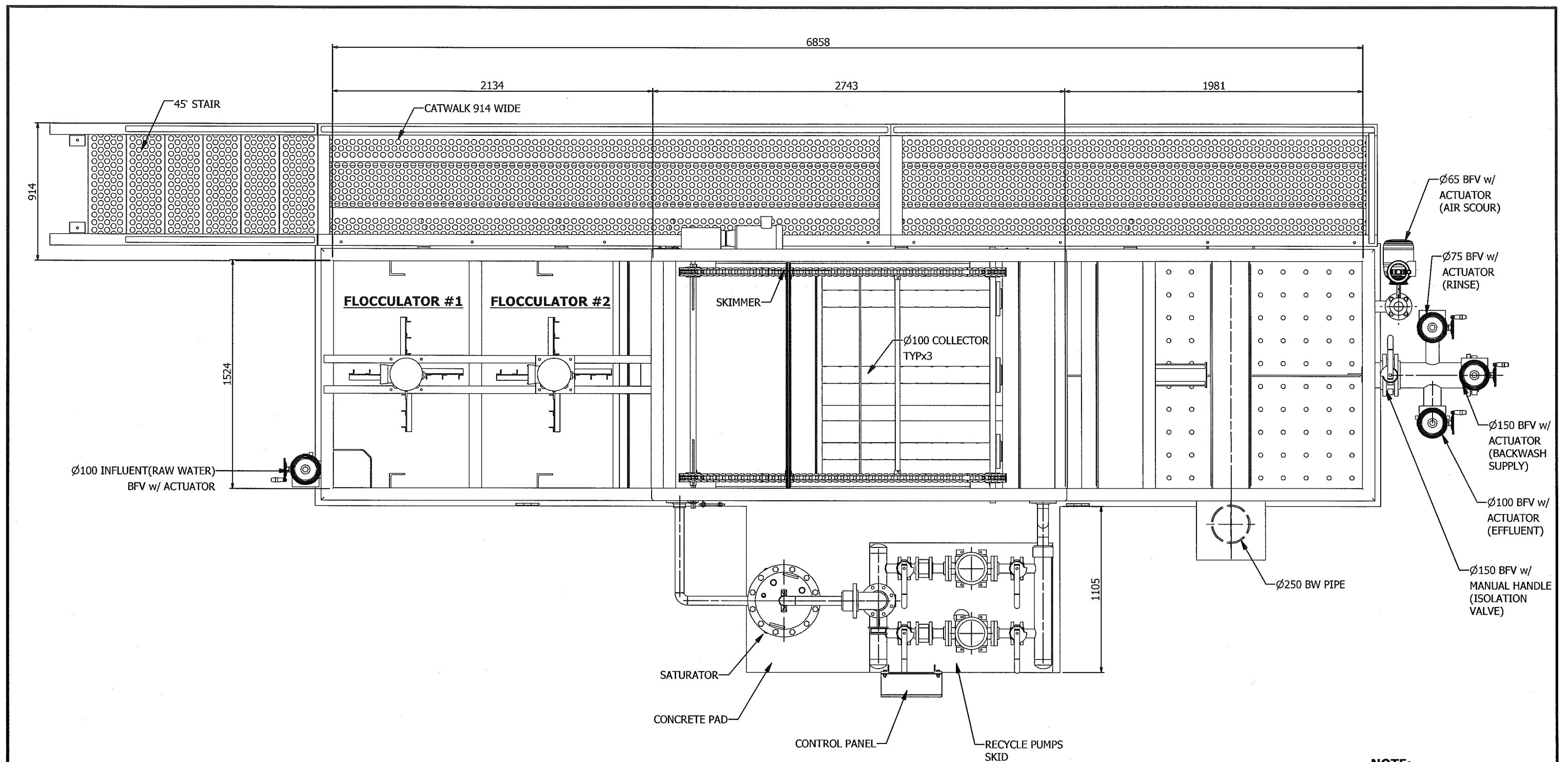
ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	EXTENSION
7.0	ANNUAL OPERATING COSTS				
7.1	ANNUAL POWER CONSUMPTION & CHEMICAL USAGE (Based on 2006-2012 Average Annual Consumption)	m ³	52,000	\$0.15	\$7,800
7.2	ANNUAL STAFF REQUIREMENTS	hrs	700	\$50.00	\$35,000
8.0	ANNUAL MAINTENANCE COSTS (2% of Capital Cost)	%	2%	\$1,180,000	\$23,600
	TOTAL ESTIMATED ANNUAL O&M COSTS (EXCLUDING TAXES)				\$66,400

Notes:

- 1.) This cost estimate was prepared by Koers & Associates Engineering Ltd. for the Alberni Clayquot Regional District. The material in it reflects the best judgment of Koers & Associates in light of the information available to it at the time of preparation. Any use which a Third Party makes of this estimate, or any reliance on decisions to be made upon it, are the responsibility of such parties. Koers & Associates accepts no responsibility for damages, if suffered by any Third Party as a result of the decision made or actions based on this estimate.
- 2.) Class C Estimate - An estimate prepared with limited site information and based on probable conditions affecting the project. It represents the total of all identifiable project costs and is used for program planning, to establish a more specific definition of clients needs and to obtain preliminary project approval. In accordance with the Auditor General for Local Government.

File: H:\0002 Alberni Clayoquot RD\1476 Pilot Testing for Bamfield WS\03 Drawings\1467-Base.dwg Plot Time: Jan 29, 2015 - 9:35am User: kdoll





TOP VIEW

NOTE:

DIMENSIONS ARE IN MILLIMETER

REV	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

NOTE

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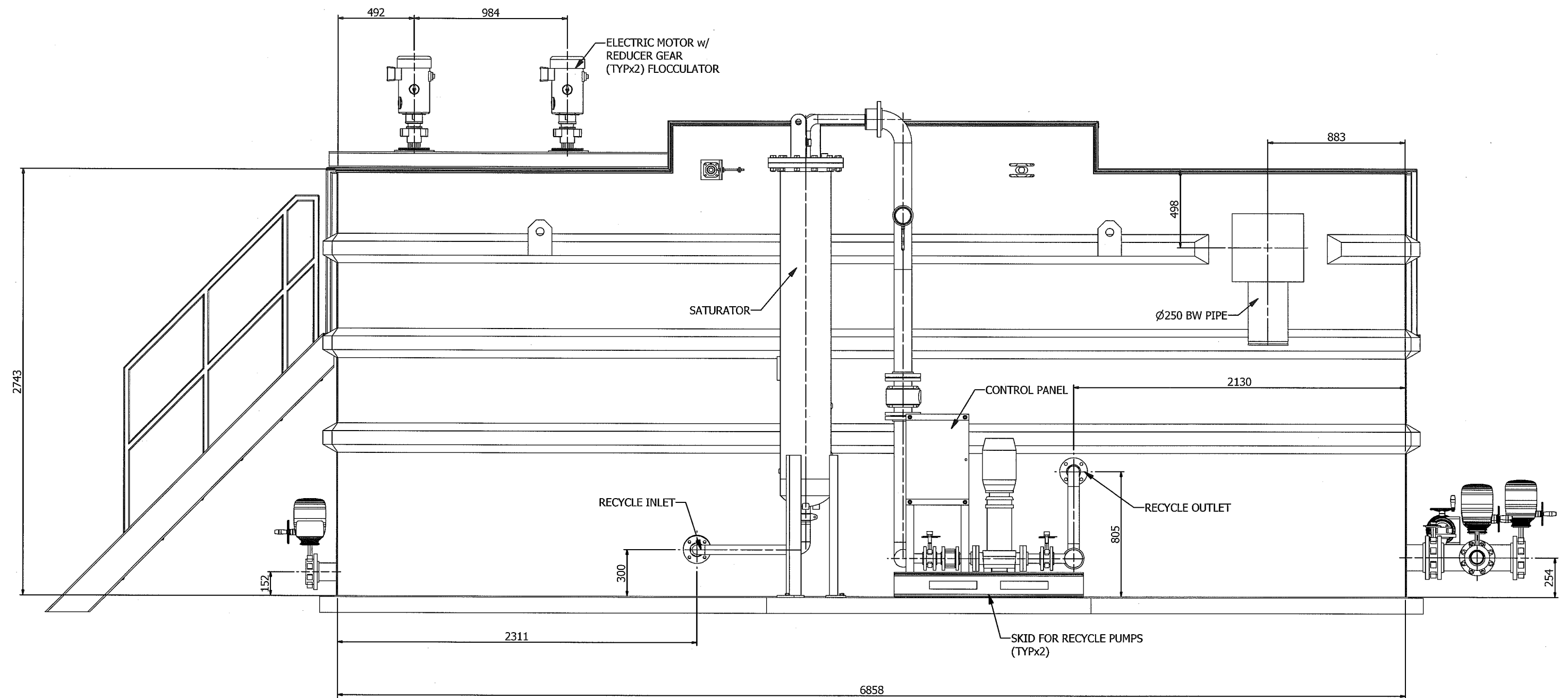
CORIX
Water Systems

19900 84th AVENUE LANGLEY, B.C., CANADA V2Z 3C2
PHONE : 604-455-3630 TOLL FREE : 1-800-500-8855
www.corix.com

DRAWN	JL
DESIGN	KB
CHECKED	KB
APPROVED	JY
DATE	JAN. 13/2015
SCALE	NTS

BAMFIELD DAF WTP
(REF #1301-0190)
CORIX DAF - 115
MECHANICAL PLAN LAYOUT
SHEET 1 OF 4

DRAWING NO.	14054-01	REV	-
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ELEVATION VIEW (LEFT SIDE)

REV	DESCRIPTION	BY	CHK'D	APP'D	DATE

NOTE

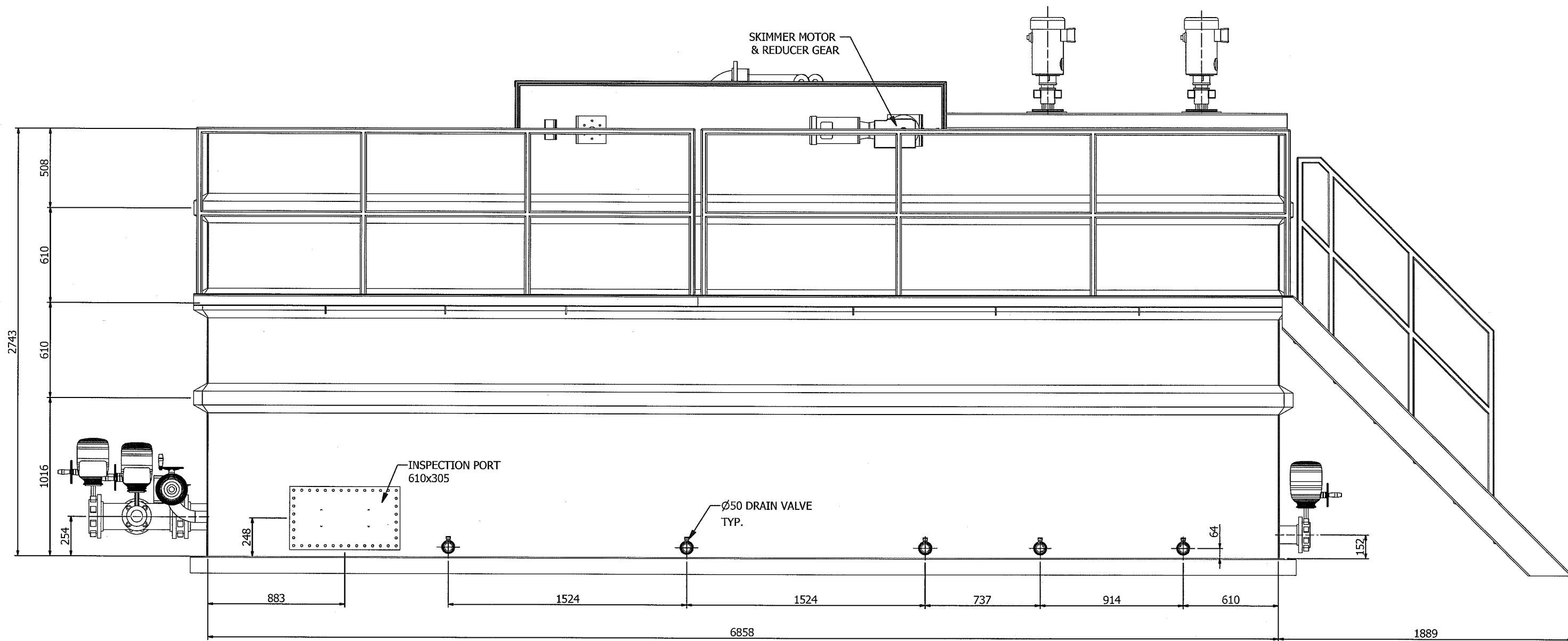
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DRAWN	JL
DESIGN	KB
CHECKED	KB
APPROVED	JY
DATE	JAN. 13/2015
SCALE	NTS

BAMFIELD DAF WTP (REF #1301-0190) CORIX DAF - 115 MECHANICAL PLAN LAYOUT SHEET 2 OF 4	DRAWING NO. 14054-01	REV -
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ELEVATION VIEW (RIGHT SIDE)

REV	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

NOTE

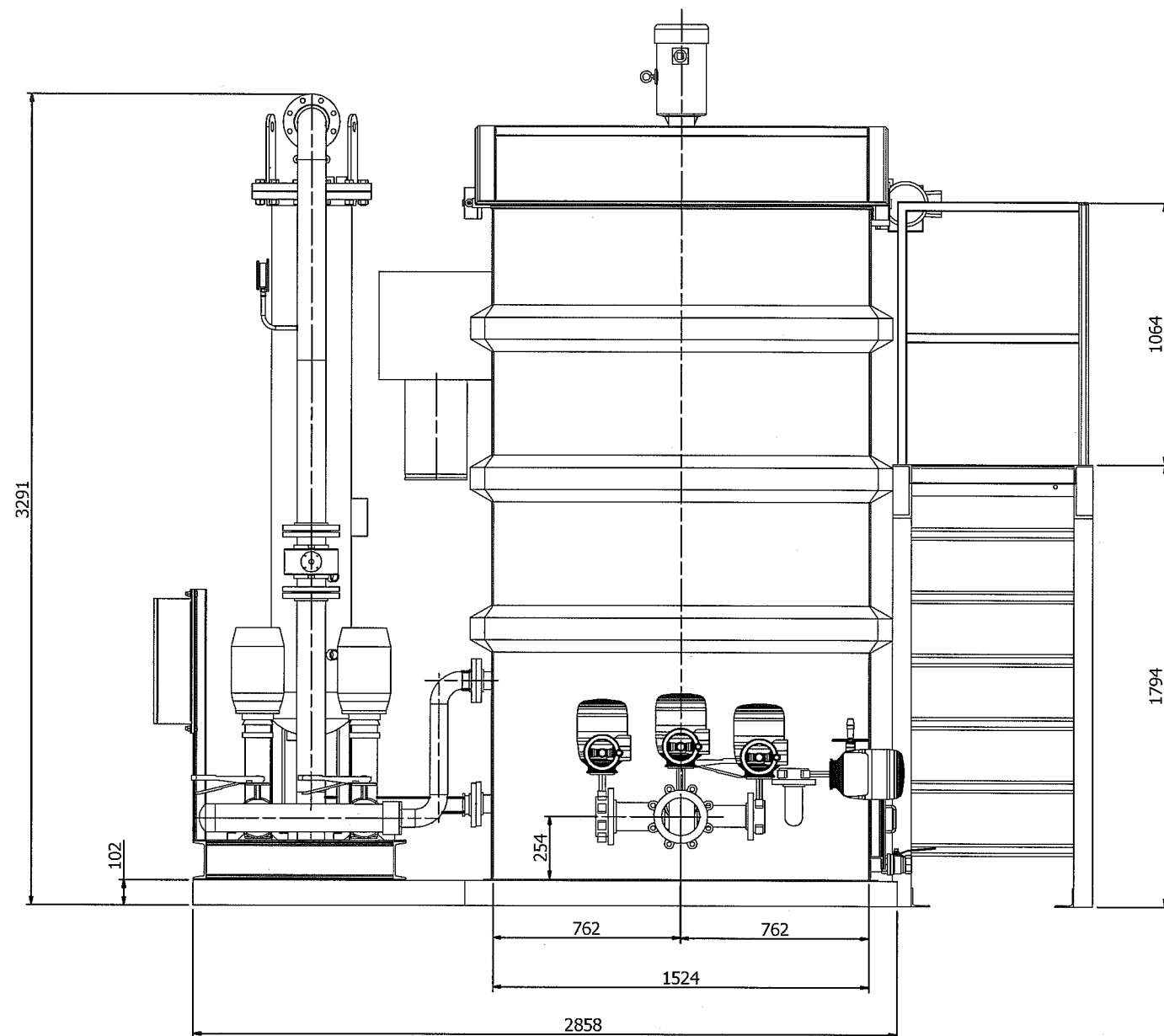
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CORIX
Water Systems

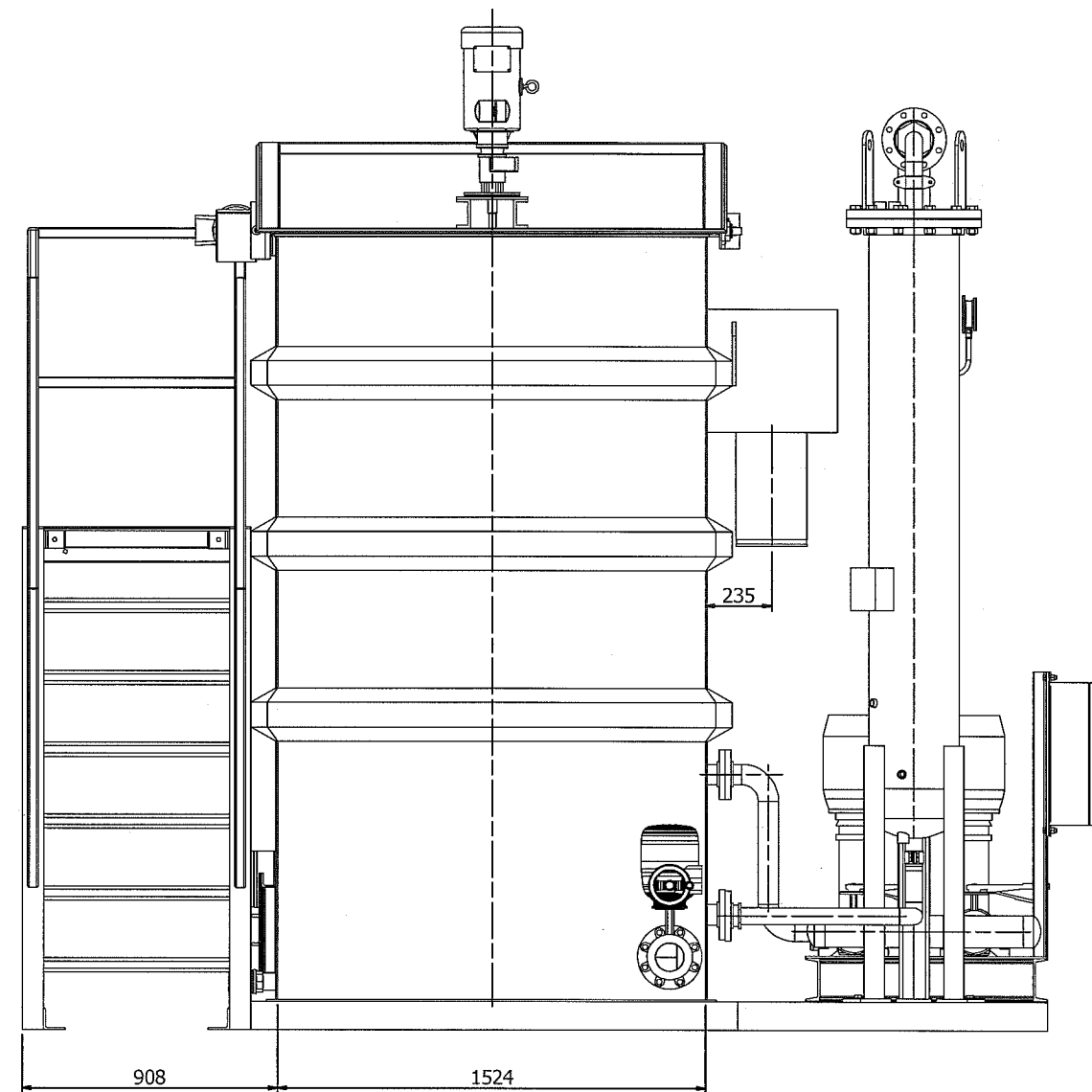
19900 84th AVENUE LANGLEY, B.C., CANADA V2L 3C2
PHONE : 604-455-3630 TOLL FREE : 1-800-500-8855
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DRAWN	JL
DESIGN	KB
CHECKED	KB
APPROVED	JY
DATE	JAN. 13/2015
SCALE	NTS

BAMFIELD DAF WTP	
(REF #1301-0190)	
CORIX DAF - 115	
MECHANICAL PLAN LAYOUT	
SHEET 3 OF 4	
DRAWING NO.	14054-01
REV	-



FRONT VIEW



BACK VIEW

REV	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

NOTE

THIS DRAWING IS THE PROPERTY OF CORIX WATER SYSTEMS, AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY CORIX WATER SYSTEMS.

CORIX
Water Systems

19900 84th AVENUE LANGLEY, B.C., CANADA V2I 3C2
PHONE : 604-455-3630 TOLL FREE : 1-800-500-8855
www.corix.com

DRAWN	JL
DESIGN	KB
CHECKED	KB
APPROVED	JY
DATE	JAN. 13/2015
SCALE	NTS

BAMFIELD DAF WTP
(REF #1301-0190)
CORIX DAF - 115
MECHANICAL PLAN LAYOUT
SHEET 4 OF 4

DRAWING NO.	14054-01	REV	-
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From: [Wendy Thomson](#)
To: [Casual](#)
Subject: FW: Bamfield water - Preliminary Schedule
Date: Tuesday, April 19, 2016 8:13:24 AM

From: Chris Downey <cdowney@koers-eng.com>
Sent: Monday, April 18, 2016 2:49 PM
To: Russell Dyson; Andrew McGifford
Cc: Ken Doll
Subject: RE: Bamfield water - Preliminary Schedule

Hi Russell,

A preliminary Schedule would be as follows:

Award April 27

Project Start-up & Review Pilot Recommendations 1 week - May 6

Assuming we accept the DAF Water Treatment Plant (WTP) recommended in the Pilot Study

Prepare WTP Supply Contract documents for procurement of WTP 3 weeks - May 27

Tender WTP Supply Contract 3 weeks – June 17

Award WTP Supply Contract to Supplier 3 weeks – July 8

Receive Shop Drawings from WTP Supplier 3 weeks - July 29

Review Shop Drawings and comments 2 weeks - August 12

WTP Supplied to site 16 weeks – Dec 2

Site Survey, Base Plan & Develop Site Layout 3 weeks May 20

Preliminary Design of WTP 7 weeks – July 8

Detailed Design & Contract Document Preparation of WTP 10 weeks – Sept 16

Tender WTP Install Contract 3 weeks – Oct 7

Award WTP Install Contract 4 weeks – Nov 4

Construction of WTP Install Contract 20 weeks – March 2017

Regards, Chris

Chris Downey P.Eng.



PO Box 790, 194 Memorial Avenue, Parksville, BC, V9P 2G8
T:250-248-3151 F:250-248-5362 C:250-951-8551 cdowney@koers-eng.com

Bamfield Water System Sampling History

2007	August	Sugsaw Lake	Conventional Parameters
2011	November	Sugsaw Lake	Conventional Parameters
2012	November	Sugsaw Lake	Conventional Parameters
		Reservoir	Conventional Parameters & THM
		Marine Station	THM
2013	February	Reservoir	THM
		Marine Station	THM
	May	Reservoir	THM
		Marine Station	THM
	August	Reservoir	THM
		Marine Station	THM
	November	Reservoir	THM
		Marine Station	THM
	December	Sugsaw Lake	Conventional Parameters
		Reservoir	Conventional Parameters
2014	March	Reservoir	THM
	May	Reservoir	THM
	July	Reservoir	THM
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
	August	Reservoir	THM
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
	September	Reservoir	THM
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
	October	Reservoir	THM
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
	November	Pilot Testing	Pilot Testing Parameters
		Reservoir	THM
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
	December	Pilot Testing	Pilot Testing Parameters
2015	January	Reservoir	THM
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
	March	Sugsaw Lake	Parasites
		Sugsaw Lake (3 Locations)	Lake Testing Parameters
		Reservoir	THM
	April	Sugsaw Lake (3 Locations)	Lake Testing Parameters
		Reservoir	THM
	May	Sugsaw Lake (3 Locations)	Lake Testing Parameters
		Reservoir	THM
	August	Sugsaw Lake (3 Locations)	Lake Testing Parameters
		Reservoir	THM
	December	Sugsaw Lake (3 Locations)	Lake Testing Parameters
		Reservoir	THM
2016			

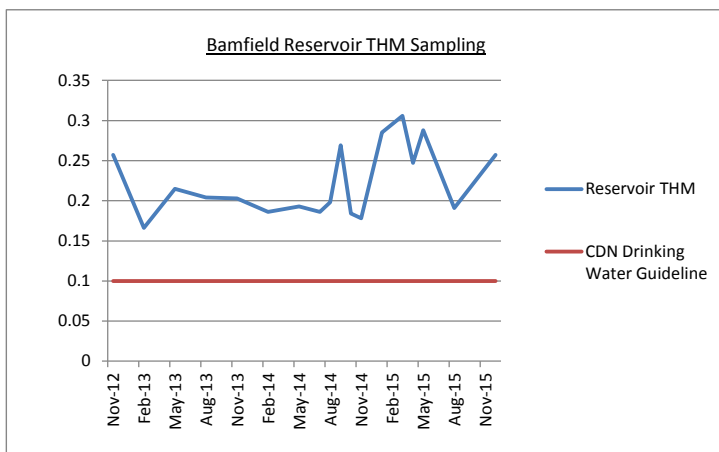
Conventional Parameters	pH, TDS, metals, colour, tannins & Lignins
Pilot Testing Parameters	Colour (true & apparent), Dissolved organic carbon, Total organic carbon, UV Transmittance, Iron, Manganese, pH
Lake Testing Parameters	Colour (true & apparent), Conductivity, Dissolved organic carbon, Total organic carbon, Total Organic Carbon, Iron, Manganese, Total Suspended Solids, Turbidity, Total Coliforms, E. Coli

Sugsaw Lake Intake
Water Sampling Parameters and Results

	Temp	Apparent Colour	True Colour	TOC	DOC	T-Alum	D-Alum	T-Iron	D-Iron	T-Mn	D-Mn	Alk	pH	UV Trans	Turbidity	E.Coli	Total Coliforms
Nov-11		54				0.153		0.094		0.013		<20	6.70	60.5	<0.5	1	83.1
Nov-12		48		5.70		0.166		0.097		0.009		<20	6.60		0.60	3	270
Dec-13		46										<20	6.50	58.3	0.50	<1	27.1
Jul-14	20.3	23			4.10			0.035		<0.005					0.80	2	>201
Aug-14	22.3	20			5.20			0.085		<0.005					0.60	<1	201
Sep-14	20.3	18			3.70			0.340		<0.005					<0.5	<1	201
Oct-14	13.4	40			6.00			0.086		0.006					1.00	43	>201
Nov-14	10.0	47			6.10			0.131		0.010					0.90	3.1	>201
Jan-15	8.0	83			4.74			0.154		0.005					0.63	<1.0	109
Mar-15	10.3	66		4.88	3.84			0.092					6.81		1.02	<2	38
Apr-15	12.8	72		3.61	3.31			0.096		0.003			6.91		0.61	<1	47
May-15	18.5	58		4.07	3.63			0.079		0.003			7.14		0.59	<1	230
Aug-15	22.9	58		3.40	3.10			0.101		0.011			6.69		0.37	<1	130
Dec-15	10.3	71		4.53	4.02			0.216		0.044			6.75			4	110
Mar-16	9.2	40	35.5	2.84	3.04	0.151	0.141	0.122	0.056	0.003	0.002	3.11	6.47		0.61	<1	6

BWS THM Testing (Total Trihalomethanes)				
		Reservoir THM	Marine Station	CDN Drinking Water Guideline
2012	Nov-12	0.257	0.259	0.100
2013	Feb-13	0.166	0.171	0.100
	May-13	0.215	0.119	0.100
	Aug-13	0.204	0.160	0.100
	Nov-13	0.203	0.214	0.100
2014	Feb-14	0.186	0.195	0.100
	May-14	0.193	0.203	0.100
	Jul-14	0.186		0.100
	Aug-14	0.198	0.149	0.100
	Sep-14	0.269	X	0.100
	Oct-14	0.184	X	0.100
	Nov-14	0.178		0.100
2015	Jan-15	0.285		0.100
	Mar-15	0.306		0.100
	Apr-15	0.247		0.100
	May-15	0.288		0.100
	Aug-15	0.191		0.100
	Dec-15	0.257		0.100
2016	Mar-16	0.195		0.100
				0.100
				0.100
				0.100
				0.100
				0.100
				0.100

DOC	Tannins	Colour	Turbidity
5.7		48	0.6
	1.2	46	0.5
4.1			0.8
5.2		20	0.6
3.7		18	0
6		40	1
6.1		47	0.9



REQUEST FOR DECISION

To: Bamfield Water Committee

From: Andrew McGifford, CPA, CGA, Manager of Environmental Services

Meeting Date: April 21, 2016

Subject: Bamfield Waterworks Contractor's Agreement

Recommendation:

THAT the Bamfield Water Advisory Committee recommend to the Alberni-Clayoquot Regional District Board of Directors enter into a contract with Les Butler to carry out the duties on the Bamfield Water system as an independent waterworks contractor at a rate of \$3,000 plus GST per month for a period of three (3) years ending April 30, 2019.

Summary:

Mr. Butler has overseen the Bamfield Waterworks system since October of 2011. The operation of the water system requires that the contractor perform his duties in an orderly, timely and efficient manner and due to the remoteness of Bamfield ensure coverage on a 24 hour per day, 365 days per year basis. When the contractor is unable to perform the duties he must engage an alternative person to perform the services required.

The contractor is responsible for all operations of the water system including water intake, water treatment, pumping station, reservoirs, control valves and all equipment associated within the water system. The contractor must report any existing or potential malfunctions of the waterworks equipment and distribution system responding within the hour of any event. Also the contractor must report any existing or potential issue to the Manager of Environmental Services immediately.

The requirements and training required of an operator of a water system has increased since the past contract expired. The contractor must now be certified and hold EOCP certification required for the system that the operator is responsible for. Bamfield Waterworks is considered a Level II system and the operator should possess a Level II distribution certification and a Level II water treatment certification. Currently, Mr. Butler has a Level II distribution certification and is close to attaining Level II water treatment certification. All expenses to attain are covered by the contractor. The addition of more equipment and the rechlorination at the reservoir has increased the duties since the original contract was enacted.

Time Requirements – Staff & Elected Officials:

Time will be minimal for staff and elected officials to finalize the agreement once recommended by the water advisory committee and sent to the Board for approval.

Financial:

The increase will be from \$2,500 to \$3,000 monthly and the per hour additional work rate will increase from \$25 to \$30 per hour. The cost increase per year will be \$6,000 on the base contract and \$5 per hour on additional works required on the system.

Submitted by: _____
Andrew McGifford, CPA, CGA, Manager of Environmental Services

Approved by: _____
Russell Dyson, Chief Administrative Officer



ALBERNI-CLAYOQUOT REGIONAL DISTRICT

CONTRACT AGREEMENT

**FOR THE PROVISION OF SERVICES FOR
THE BAMFIELD WATERWORKS SYSTEM**

WATERWORKS CONTRACTOR'S AGREEMENT

THIS AGREEMENT is dated the ____ day of _____, 2016.

BETWEEN:

ALBERNI CLAYOQUOT REGIONAL DISTRICT

3008 5th Ave
Port Alberni BC V9Y 3E2

(the "Regional District")

OF THE FIRST PART

AND:

LES BUTLER

135 Regent Street
Bamfield, BC V0R 1V0

(the "Waterworks Contractor")

OF THE SECOND PART

WHEREAS:

- A. The Regional District has established the Bamfield Waterworks Service by Establishing Service Bylaw No. 268.
- B. The Regional District has agreed to engage the Waterworks Contractor, and the Waterworks Contractor has agreed to be engaged by the Regional District in respect of the Project on the terms and subject to the conditions set out in this Agreement.

NOW THEREFORE, the Regional District and the Waterworks Contractor, in consideration of their mutual duties and responsibilities to one another as hereinafter set forth, AGREE AS FOLLOWS:

ARTICLE 1

INTERPRETATION

1.1 In this Agreement, the following words shall have the following meanings:

- (a) "AGREEMENT" means this Agreement for professional services, the Waterworks Contractor's proposal, and all other schedules attached to this Agreement.
- (b) "ALTERNATE" means an employee or contractor engaged by the Waterworks Contractor in connection with the Project who will work under the supervision of the Waterworks Contractor and perform the Services in order to ensure continuous coverage of the Project.

- (c) "PROJECT" shall refer to the Project described in paragraph A.1 of Schedule "A".
 - (d) "SERVICES" means the Waterworks Contractor's duties and responsibilities to the Regional District as set out in Paragraph A.2 of Schedule "A".
 - (e) "WATERWORKS" means the Bamfield waterworks system, which includes, but is not limited to, a pumping station, reservoirs, controls, water intake, water intake, water treatment, distribution system, control valves, and all equipment pertinent thereto.
 - (f) "WATERWORKS EMERGENCY" means an emergency situation where water quality, water supply or the Waterworks will be compromised without immediate intervention by the Waterworks Contractor
- 1.2 In the event of a conflict between a provision in this Agreement and a provision in a Schedule attached to this Agreement the provision in this Agreement shall prevail.
- 1.3 Whenever the singular or masculine is used herein, the same shall be deemed to include the plural or the feminine or the body politic or corporate where the context of the parties so require.
- 1.4 The captions or headings appearing in this Agreement are inserted for convenience of reference only and shall not affect the construction hereof.

ARTICLE 2

WATERWORKS CONTRACTOR'S DUTIES AND RESPONSIBILITIES TO THE REGIONAL DISTRICT

THE WATERWORKS CONTRACTOR SHALL:

- 2.1 Render the Services to the Regional District under this Agreement with that degree of care, skill and diligence normally provided by waterworks contractors having similar qualifications in the performance of duties of a similar nature to that contemplated by this Agreement at the time and place that such Services are rendered and more particularly set out in Schedule "A". The Contractor is the Chief Operator for the Bamfield Waterworks system and is the Direct Responsible Charge. Without limiting the foregoing, the Waterworks Contractor shall be a certified Level II Distribution System and Level II Water Treatment Facility operator with the Environmental Operators Certification Program (British Columbia) and shall be in good standing throughout the Term of this contract. Contractor shall provide proof of certification at the request of the Regional District.
- 2.2 Charge only the fees for the performance of all of the consulting Services as set out in this Agreement to be performed by the Waterworks Contractor. All costs and expenses incurred by the Waterworks Contractor to provide the Services, including costs

associated with labour, transportation, machinery, equipment, and tools, must be paid by the Waterworks Contractor.

- 2.3 Perform the Services to be provided under this Agreement on a daily and on-call basis, 24 hours per day, 365 days per year, and respond to a Waterworks Emergency within one hour.
- 2.4 Complete monthly reporting and expense forms in the format required by the Regional District from time to time.
- 2.5 Procure and maintain any insurance that the Waterworks Contractor is required to provide by law, or that is reasonably necessary to insure against any risks the Waterworks Contractor may assume as a result of entering into this Agreement, including registering with WorkSafe BC, and obtaining coverage for the Waterworks Contractor and his or her employees. The Waterworks Contractor must provide satisfactory proof of WorkSafe BC coverage to the Regional District upon request.
- 2.6 Without limiting section 2.5, procure and maintain the insurance in accordance with Schedule "C" to this Agreement.
- 2.7 Comply with all requirements of the *Workers Compensation Act* and Occupational Health and Safety Regulation in the performance of the Services. Without limiting the generality of the foregoing, the Waterworks Contractor shall assume all responsibilities of an employer under section 115 of the *Workers Compensation Act* with respect to the Waterworks Contractor and his or her employees, and assume all responsibilities of a prime contractor as defined in section 118 of the *Workers Compensation Act*, for purposes of Part 3 of the *Workers Compensation Act* whenever a site where the Services are being performed constitutes a "multi-employer workplace" as defined in section 118 of the *Workers Compensation Act*.
- 2.8 Indemnify and save harmless the Regional District, its elected officials, appointed officers, employees, agents and contractors from and against all claims, costs, losses, damages, actions, causes of action and expenses arising from an error, omission or negligent or willful act of the Waterworks Contractor in the performance of the Services by the Waterworks Contractor or its agents, employees, or sub-contractors, or from a breach of this Agreement by the Waterworks Contractor.

ARTICLE 3

REGIONAL DISTRICT'S DUTIES AND RESPONSIBILITIES TO THE WATERWORKS CONTRACTOR

THE REGIONAL DISTRICT SHALL:

- 3.1 Make available to the Waterworks Contractor all relevant information or data pertinent to the Project which is in the hands of the Regional District and is required by the Waterworks Contractor and instruct the Waterworks Contractor to the extent of the Regional District's ability as to the Regional District's total requirements in connection

with the completion of the services. The Waterworks Contractor shall be entitled to rely upon the accuracy and completeness of such information and data furnished by the Regional District except where it is unreasonable to do so.

- 3.2 Authorize the Waterworks Contractor to act as its agent for such specific purposes as are reasonably necessary to the Waterworks Contractor's rendering of his Services pursuant to this Agreement.
- 3.3 Give reasonably prompt consideration to all draft reports, drawings, proposals and other documents relating to the Project provided to the Regional District by the Waterworks Contractor, and, whenever prompt action is necessary, where possible inform the Waterworks Contractor of a decision in such reasonable time so as not to delay the Services of the Waterworks Contractor.
- 3.4 Pay to the Waterworks Contractor as a consultancy fee for all Services to be rendered under this Agreement as outlined in Schedule "A" to this Agreement and payable at the times set out in Schedule "A" to this Agreement, except that if the Waterworks Contractor is in default of the performance of any of his material obligations set forth in this Agreement, then the Regional District may immediately withhold payment of the fees outlined in Schedule "A" until such time as the Waterworks Contractor has remedied such default to the satisfaction of the Regional District.
- 3.5 Provide those supplies and materials required for the maintenance and operation of the water system, except for those items to be provided by the Waterworks Contractor pursuant to Article 2.2.
- 3.5 Authorize the Waterworks Contractor or the Alternate to enter into property (public and private) and into the Project site in accordance with sections 268 and 314.1 of the *Local Government Act* and section 16 of the *Community Charter* for the purposes of carrying out the Services related to the Project. Such authorization may include a safety orientation by the Regional District for the Waterworks Contractor, the Alternate, and/or any employees, to identify the hazards of the site.

ARTICLE 4

COMMENCEMENT AND TERM

- 4.1 The term of this Agreement shall be for the period commencing May 1, 2016 and shall be for three (3) years, subject to the termination provisions set out in this Agreement (the "**Term**").

ARTICLE 5

REIMBURSABLE EXPENSES

- 5.1 For this specific Agreement, all reimbursable expenses are included within the fees as set out in Schedule "A".

ARTICLE 6

TERMINATION AND SUSPENSION

BY THE REGIONAL DISTRICT:

- 6.1 If the Waterworks Contractor is in default in the performance of any of his material obligations set forth in this Agreement, then the Regional District may, by written Notice to the Waterworks Contractor, require such default to be corrected. If within ten (10) days after receipt of such Notice such default shall not have been corrected or reasonable steps to correct such default have not been taken, the Regional District may, without limiting any other right it may have, immediately terminate this Agreement and shall pay the Waterworks Contractor for the Services rendered and disbursements incurred by the Waterworks Contractor to the date of termination, less any amounts necessary to compensate the Regional District for damages or costs incurred by the Regional District or by any person employed by or on behalf of the Regional District arising from the Waterworks Contractor's default.
- 6.2 If the Regional District is unwilling or unable to proceed with the Project, the Regional District may terminate this Agreement by giving fifteen (15) days prior written notice to the Waterworks Contractor. Upon receipt of such written Notice, the Waterworks Contractor shall perform no further Services other than those reasonably necessary to close out his Services. In such an event the Waterworks Contractor shall be paid by the Regional District for all Services performed and for all disbursements incurred pursuant to this Agreement and remaining unpaid as of the effective date of such termination.
- 6.3 This Agreement may be terminated by either party without cause upon sixty (60) days' written notice of its intention to do so at any time during the Term.
- 6.4 If the Waterworks Contractor becomes insolvent or is assigned into bankruptcy, the Regional District may immediately terminate this Agreement.
- 6.5 If the Waterworks Contractor assigns part or all of the work of the Services to another person, without the Regional District's consent, the Regional District may immediately terminate this Agreement.

BY THE WATERWORKS CONTRACTOR:

- 6.6 If the Regional District is in default in the performance of any of the material obligations set forth in this Agreement, then the Waterworks Contractor may, by written Notice to the Regional District, require such default to be corrected. If within thirty (30) days after receipt of such Notice such default shall not have been corrected, the Waterworks Contractor may without limiting any other right he may have, immediately terminate this Agreement. In such an event, the Waterworks Contractor shall be paid by the Regional District for all Services performed and for all disbursements incurred pursuant to this agreement and remaining unpaid as of the effective date of such termination.
- 6.7 If the Waterworks Contractor's Services are suspended by the Regional District at any time for more than thirty (30) days through no fault of the Waterworks Contractor, then

the Waterworks Contractor shall have the right at any time until such suspension is lifted by the Regional District, to terminate this Agreement upon giving written Notice thereof to the Regional District for all Services performed and for all disbursements incurred pursuant to this Agreement and remaining unpaid as of the effective date of such suspension unless the parties otherwise agree in writing.

ARTICLE 7

DISPUTE RESOLUTION

- 7.1 All matters in dispute under this Agreement which are not first resolved between Regional District and Waterworks Contractor, acting reasonably, may, with the concurrence of both the Regional District and the Waterworks Contractor, be submitted to arbitration pursuant to the *Commercial Arbitration Act* to a single arbitrator appointed jointly by them.
- 7.2 No one shall be nominated to act as an arbitrator who is in any way financially interested in the conduct of the Project or in the business affairs of either the Regional District or the Waterworks Contractor.
- 7.3 If the parties cannot agree on the choice of an arbitrator, each party shall select a nominee and the nominees shall jointly appoint an arbitrator.
- 7.4 The laws of the Province of British Columbia shall govern this Agreement and any arbitration or litigation in respect thereof.
- 7.5 The award of the arbitrator shall be final and binding upon the parties.

ARTICLE 8

CONFIDENTIALITY AND OWNERSHIP

- 8.1 The Waterworks Contractor shall not disclose any information, data or secret of the Regional District to any person other than representatives of the Regional District duly designated for that purpose in writing by the Regional District and shall not use for the Waterworks Contractor's own purposes or for any purpose other than those of the Regional District any information, data or secret the Waterworks Contractor may acquire as a result of being engaged pursuant to this Agreement.
- 8.2 The Waterworks Contractor must not, during the term of this Agreement, perform a service for, or provide advice to any person, firm or corporation, which gives rise to a conflict of interest between the obligations of the Waterworks Contractor under this Agreement and the obligation of the Waterworks Contractor to such other person, firm or corporation.
- 8.3 All plans, specifications, manuals, preliminary drafts, sketches, copies, designs, computer modules, software programs, technology, data and information and all other materials produced by the Waterworks Contractor under this Agreement (collectively the

"Intellectual Property") are and will remain the Regional District's property even though the Waterworks Contractor or another party has physical possession of them. The Waterworks Contractor hereby waives, in favour of the Regional District, any moral rights the Waterworks Contractor or its employees, sub-Waterworks Contractors or sub-contractors may have in the Intellectual Property. Until the expiry or earlier termination of this Agreement, the Waterworks Contractor may retain copies, including reproducible copies of the Intellectual Property. The Waterworks Contractor must not use the Intellectual Property on other projects or for other Regional Districts except with written consent from the Regional District. The Waterworks Contractor must obtain the Regional District's written consent before the Waterworks Contractor publishes or makes public any of the Intellectual Property in book, periodical, electronic or any other form.

- 8.4 Upon expiry or earlier termination of this Agreement, the Waterworks Contractor must turn over to the Regional District all Intellectual Property, keeping a single copy for the Waterworks Contractor's own archival purposes.
- 8.5 It is understood and agreed that the covenants and agreements contained in paragraphs 2.5, 7.1, 7.2, 7.3, 7.4 and 7.5 shall survive the expiry or earlier termination of this Agreement and that those paragraphs are severable for such purpose.

ARTICLE 9

DESIGNATED REPRESENTATIVES

- 9.1 A General Manager appointed by the Regional District shall, by notice in writing to the Waterworks Contractor, designate a representative to act on the Regional District's behalf with respect to the performance of this Agreement (herein referred to as the "Regional District Representative") and may at any time or from time to time thereafter, by notice in writing to the Waterworks Contractor, designate another person to act as the Regional District Representative in the place and stead of any person previously designated.
- 9.2 The Waterworks Contractor shall, by notice in writing to the Regional District, designate a representative to act on the Waterworks Contractor's behalf with respect to the performance of this Agreement (herein referred to as the "Project Manager") and may at any time or from time to time thereafter, upon written approval from the Regional District, designate another person to act as the Project Manager in the place and stead of any person previously so designated.

ARTICLE 10

NOTICES

- 10.1 Unless otherwise specified herein, any Notice required to be given hereunder by any party shall be deemed to have been well and sufficiently given if mailed by prepaid registered mail or faxed to or delivered at the address of the other party set forth on the first page of this Agreement or at such other address as the other party may from time to time direct in writing, and any such Notice shall be deemed to have been received if

mailed or faxed, 72 hours after the time of mailing or faxing and, if delivered, upon the date of delivery. If normal mail service or facsimile service is interrupted by strike, slow down, force majeure or other cause, then a notice sent by the impaired means of communication will not be deemed to be received until actually received, and the party sending the notice shall utilize any other such Services which have not been so interrupted or shall deliver such notice in order to ensure prompt receipt thereof.

ARTICLE 11

MANAGEMENT OF WATERWORKS

- 11.1 The Regional District shall maintain the overall authority for management and control of the Waterworks. Nothing in this Agreement grants the Waterworks Contractor any interest in the Waterworks and the Regional District may, in its discretion, retain other contractors, agents and employees to carry out work on and around the Waterworks.

ARTICLE 12

ENTIRE AGREEMENT

- 12.1 The provisions and Schedules herein constitute the entire Agreement between the Regional District and the Waterworks Contractor and supersedes all previous expectations, understanding, communications, representations and agreements whether verbal or written between the Regional District and the Waterworks Contractor with respect to the subject matters hereof and may not be modified except by subsequent agreement in writing executed by the Regional District and the Waterworks Contractor.
- 12.2 The Regional District may issue to the Waterworks Contractor a Change Notice to make changes to the work, omit part of the work, or require additional work. The Change Notice shall prevail over any other provision of this Agreement, in the event of an inconsistency between them. The Regional District and the Waterworks Contractor shall appraise the value of the changes to the work specified by the Change Notice, and within sixty (60) days of receipt of the Change Notice, agree on the new price to be paid for the work or the reduction in the fee payable to the Waterworks Contractor.

ARTICLE 13

NO DUTY OF CARE

- 13.1 The Waterworks Contractor acknowledges that the Regional District, in the preparation of the Contract Documents, supply of oral or written information to the Waterworks Contractor, review of proposals or the carrying out of the Regional District's responsibility under this Agreement, does not owe a duty of care to the Waterworks Contractor and the Waterworks Contractor waives for itself, its successors and assigns, the right to sue the Regional District in tort for any loss, including economic loss, damage, cost or expense, arising from or connected with any error, omission or misrepresentation occurring in the preparation of this Agreement, the Request for

Proposals, supply of oral or written information to proponents, review of Proposals, or carrying out of the Regional District's responsibilities under this Agreement.

ARTICLE 14

WAIVER

- 14.1 Except as may be specifically agreed in writing, no action or failure to act by the Regional District or the Waterworks Contractor shall constitute a waiver of any right or duty afforded any of them under this Agreement nor shall any such action or failure to act constitute an approval of or acquiescence in any breach hereunder.

ARTICLE 15

RELATIONSHIP

- 15.1 The legal relationship between the Waterworks Contractor and the Regional District arising pursuant to this Agreement is that of an independent contractor and purchaser of services. Nothing in this Agreement shall be interpreted so as to render the Regional District the employer or partner of the Waterworks Contractor, or the employer of anyone working for the Waterworks Contractor, and the Waterworks Contractor must not do anything that would result in anyone working for the Waterworks Contractor being considered an employee of the Regional District. Except where specifically authorized under section 3.2 of this Agreement, the Waterworks Contractor is not, and must not claim to be the agent of the Regional District for any purpose.

ARTICLE 16

VALIDITY

- 16.1 If any part of this Agreement is or is declared invalid, the remainder shall continue in full force and effect and be construed as if the Agreement had been executed without the invalid portion.

ARTICLE 17

LAW

- 17.1 This Agreement shall be governed by and construed in accordance with the laws in force from time to time in the Province of British Columbia.
- 17.2 Unless stated otherwise in this Agreement, all sums of money are in Canadian Dollars.

ARTICLE 18

TRANSFER OF INTEREST

18.1 This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, executors, administrators, personal representatives, successors and permitted assigns. Neither party shall assign, subcontract or transfer any interest in this Agreement without the prior written consent of the other.

18.2 Time is of the essence in this Agreement.

IN WITNESS HEREOF the Regional District and the Waterworks Contractor have executed this Agreement as of the day, month and year first above written.

ALBERNI CLAYOQUOT REGIONAL DISTRICT)

by its authorized signatories:)

)

_____)

Chair:)

_____)

Chief Administrative Officer)

_____)

)

SIGNED, SEALED AND DELIVERED)

in the presence of:)

_____)

Witness)

_____)

_____)

Address)

_____)

_____)

_____)

_____)

_____)

Occupation)

_____)

[LES BUTLER]

SCHEDULE "A"

WATERWORKS CONTRACTOR'S SERVICES AND FEES

A.1 THE PROJECT:

The Services provided under this Agreement are duties in relation to the efficient, orderly maintenance and operation of the Bamfield Waterworks System including, but not limited to, the pumping station, reservoirs, controls, water intake, water treatment, distribution system, control valves, and all equipment pertinent thereto, to be provided by the Waterworks Contractor under the direction of the Manager of Environmental Services of the Regional District or his designate.

A.2 SERVICES:

THE WATERWORKS CONTRACTOR SHALL:

- A2.1 Provide all consulting Services as described in Schedule "B" (Scope of Services) necessary for completion of the Services.
- A2.2 In rendering the Services on the Project, engage an Alternate who will work under the supervision of the Waterworks Contractor, who will perform the Services on behalf of the Waterworks Contractor when the Waterworks Contractor is unable to perform such Services, in order to ensure continuous and uninterrupted provision of Services.
- A2.3 In rendering the Services on the Project, engage sub-contractors to perform services necessary to enable the Waterworks Contractor to carry out the duties and responsibilities as set forth in this Agreement.
- A2.4 In rendering the Services on the Project, deal with the public and the Regional District in a courteous and respectful manner and ensure that any sub-contractors, Alternates, employees or agents of the Waterworks Contractor deal with the public and the Regional District in a courteous and respectful manner.
- A2.5 Provide copies to the Regional District of contract drawings, specifications, design calculations and notes, field information, records and other information relevant to the Waterworks Contractor's Services.

A.3 NO ADDITIONAL WORK:

- A3.1 The Waterworks Contractor shall not undertake any work, in connection with the said Services, additional to or supplemental to or in substitution of the Services specified herein, unless authorized in advance in writing by the Regional District (the "Additional Services").
- A3.2 Notwithstanding section A3.1 above, the Waterworks Contractor shall assist the Regional District with the distribution of public notices, at the written request of the Regional District (the "Public Notice Services").

A3.3 Notwithstanding section A3.1 above, the Waterworks Contractor shall perform those services required in a Waterworks Emergency ("Emergency Services").

A.4 PAYMENT OF FEES:

A4.1 The Regional District shall pay to the Waterworks Contractor \$3,000, plus GST, as applicable, per month for the Services set forth in this Schedule "A".

A4.3 The fee for the Waterworks Contractor's Additional Services, Public Notice Services and Emergency Services shall be \$30.00 plus GST, as applicable, per hour.

SCHEDULE "B"

SCOPE OF SERVICES

1.0 Duties and Responsibilities

The Waterworks Contractor shall perform all duties in relation to the continuous, efficient, orderly maintenance and operation of the works (including, but not limited to, the pumping station, reservoirs, controls, water intake, water treatment, distribution system, control valves, and all equipment pertinent thereto) for the supply of potable water throughout the Bamfield Waterworks System, including:

1. Inspect and record daily the state of all waterworks equipment (including but not limited to pumphouse, chlorine shed, flushing units, reservoirs), reporting any inconsistencies and potential compromise of water quality or the works immediately to the Manager of Environmental Services. Submit a monthly report of all the results of the daily inspections in a format approved by the Manager of Environmental Services within 7 days of the end of each month.
2. Respond to any and all claims of any potential compromise to the system and water quality, document the claims and the response reporting any inconsistencies and potential compromise of water quality or the works immediately to the Manager of Environmental Services. Submit a monthly report that documents the claims and response in a format approved by the Manager of Environmental services within 7 days of the end of each month.
3. Inspect test and record total and free chlorine levels and water treatment levels throughout the water system. Record reservoir levels, all waterworks gauges daily maintaining a log in a format approved by the Manager of Environmental services. Submit the log as a report in a format approved by the Manager of Environmental services within 7 days of the end of each month.
4. Inspect and record the level of sediment buildup and the state of the interior of water reservoirs weekly submitting a report in a format approved by the Manager of Environmental Services. Coordinate cleaning of the reservoirs as required by the Manager of Environmental Services.
5. Keep all vegetation trimmed within proximity of the waterworks including but not limited to the reservoir compound, pumphouse, chlorine shed, water intake, fire hydrants, valves and water meters. Maintain adequate access to all works for maintenance and emergency repairs.
6. Read and record all water service meters quarterly as scheduled by the Manager of Environmental Services, submit the results in a format approved by the Manager of Environmental Services immediately upon completion of the readings.

7. Maintain all spare waterworks parts and equipment and tools within the storage facility in a neat and orderly manner and provide the Manager of Environmental Services with regular inventories.
8. Establish and implement regular maintenance program for all aspects of the waterworks and equipment and undertake all requirements for continued operation.
9. Inspect water disinfection daily, record results and perform tests to ensure adequate disinfection throughout the system. Perform a distribution flushing program, operate automatic flushing units and ensure regulatory requirements are followed when performing these duties as determined by the Manager of Environmental Services.
10. Report any existing or potential malfunctions of waterworks equipment and the distribution system that may compromise the waterworks and water quality to the Manager of Environmental Services immediately.
11. Supervise, inspect and record installations for all new service connections.
12. Perform turn-on/turn-off duties for individual water services as required.
13. Supervise any authorized minor contract works on waterworks.
14. Handle all routine customer queries and/or complaints maintaining a log of all aspects of the queries and complaints submitting a report in a format approved by the Manager of Environmental Services monthly.
15. Maintain good public relations with water users.
16. Supervise the work of a third party retained by the Regional District with the local volunteer fire department to maintain and service fire hydrants annually. Prepare a report on the state of the fire hydrants upon completion of the annual service in a format approved by the Manager of Environmental services.
17. Collect water samples in accordance with Island Health Authority specifications and deliver immediately to the Health Region office in Port Alberni.
18. Ensure Alternate Waterworks Contractor is trained and knowledgeable in all aspects of the duties and responsibilities including reading of water meters and is available for periods of Waterworks Contractor absence.
19. Inform the Manager of Environmental Services of work schedule for Waterworks Contractor and Alternate Waterworks Contractor.
20. Provide the necessary transportation required to carry out assigned tasks.

21. Inspect integrity of Sugsaw Lake water intake and all associated works monthly, clearing screens and recording lake water levels.

2.0 Project Management

Waterworks Contractor Responsibilities:

The Waterworks Contractor is expected to carry out all necessary project management to ensure the completion of the Services. The Waterworks Contractor, working in co-operation with the Regional District project manager, is responsible for maintaining acceptable quality standards for all work produced.

Regional District Manager of Environmental Services Responsibilities:

The Manager of Environmental Services is prepared to assist and support the Waterworks Contractor during the project as follows:

- Advise the Waterworks Contractor immediately of required changes to the Scope of Work for the Project and facilitate the appropriate contract amendments as required.
- Provide Regional District documents and materials as required throughout the duration of the project.
- Provide information regarding the Regional District and the Project to date.
- Meet with the Waterworks Contractor on a regular or as needed basis to ensure that decisions are made as necessary and the Services are provided in a timely manner.
- Provide regular and ongoing professional and project guidance and advice on an as-needed basis in person or via telephone, fax or e-mail communications.
- Facilitate the organization of meetings between the Waterworks Contractor and Regional District staff, as required.
- Coordinate communication between the Waterworks Contractor and other Regional District Waterworks Contractors, as required.
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SCHEDULE "C"

INSURANCE

Without limiting the effect of the foregoing provision the Waterworks Contractor shall at all times during the continuance of this Agreement maintain public liability and property damage insurance with an insurer satisfactory to the Regional District in accordance with the following terms:

- a) Comprehensive General Liability insurance in the amount of THREE MILLION DOLLARS (3,000,000) inclusive per occurrence for bodily injury and property damage. The Regional District shall be added as an Additional Insured. The policy shall also contain an endorsement to provide the Regional District with thirty (30) days prior written notice of cancellation or material change in the policy.
- b) Automobile public liability and property damage insurance in the amount of THREE MILLION DOLLARS (\$3,000,000) per occurrence per owned, non-owned or hired vehicle.
- c) Provide to the Regional District prior to commencement of work, certificates of insurance or other evidence which satisfies the Regional District that the insurance required herein has been obtained and is in force.
- d) Ensure that the Work is carried out in conformity with the Worker's Compensation Act, R.S.B.C. 1996, c. 492, as regards to employee coverage and benefits and safety regulations.
- e) Be responsible for any deductible amounts under the policies. The cost of all insurance required by the Contract shall be included in the Waterworks Contractor's maximum fee amount.