

Denman Island Local Trust Committee

Regular Meeting Addendum

Date: July 5, 2016
Time: 10:30 am
Location: Denman Seniors Hall
 1111 Northwest Rd, Denman Island, BC

	Pages
3. TOWN HALL AND QUESTIONS 10:35 AM - 10:50 AM	
3.1 Submission from Edi Johnston regarding Ministry of Forests, Lands and Natural Resource Operations Programs	2 - 2
3.2 Submission from Harlene Holm regarding Temporary Use Permits	3 - 5
6. MINUTES 10:50 AM - 11:00 AM	
6.3 Local Trust Committee Specila Meeting Minutes dated June 25, 2016 - for adoption	6 - 9
6.4 Public Hearing Record dated June 25, 2016 - for receipt	10 - 12
9. CORRESPONDENCE	
9.1 Letter dated May 26, 2016 from Jayne O'Reilly regarding Driving on the Beach	13 - 15
10. APPLICATIONS AND REFERRALS 11:15 AM - 11:45 AM	
10.1 DE-DVP-2016.1 and DE-TUP-2016.1 (Lundberg - Citizen Design - 3131 Jemima Road)	
10.1.1 Staff Report dated June 29, 2016	16 - 148
10.1.2 Email dated July 4 2016 from Eileen Obrien	149 - 149
10.1.3 Email dated July 3 2016 from Dorrie Woodward	150 - 152
10.1.4 Email dated July 3 2016 from J Thornton	153 - 153
10.1.5 Email dated July 1 2016 from Esther Muirhead	154 - 154
10.2 DE-RZ-2015.1 (Pandesign) Density Transfer	
10.2.1 Staff Report dated June 27, 2016	155 - 176

Ask for the LTC meeting of July 5th, 2016
edi johnston

Denman's foreshore is multi-jurisdictional and FLNRO appears to be largely in charge of what happens to BC's Crown land in the Denman Island LTC's Marine Conservation areas.

But FLNRO has a "Service Plan" whose objective is to "Increase ecosystem health by working collaboratively with multi-sector partner groups and First Nations to **restore degraded ecosystems** through activities such as invasive plant management, **ecosystem restoration, remediation and best management practices**".

FLNRO also has "Partnership Agreements" through Recreation Sites and Trails BC which manage (through partnership agreements with regional districts, recreation groups etc.) 373 recreation sites and 200 recreation trails.

FLNRO also recognizes that sensitive ecosystems need protection and under the Forest and Range Practices Act those driving on and destroying habitat on Crown land can be charged and fined anywhere between \$575 and \$100,000 and/or a year in jail.

FLNRO, through the Land Use Operation Policy makes available to a regional district through its Community and Institutional Program, parcels of Crown Land for social goals that benefit the public-at-large. A regional district can also apply for a "Sponsored Crown Grant" for these parcels of Crown land.

Every square inch of our foreshore can be tenured, so why can't our LTC provide it's residents and visitors with a few dedicated beaches (which would also ensure habitat protection) at Millard Rd., Fillongley and Morning beach by taking advantage of these FLNRO programs?

Submission to the June 10, 2014 Public Hearing requesting that the Denman Island Local Trust Committee pass a resolution not to proceed with Bylaws 210 & 211.

Key concerns:

1. Secondary suites of up to 1000 square feet/ 90 square meters would be permitted in 3 out of 4 residential zones on Denman (all residential zones except R1 ⇒ small lots). According to Bylaw 210, as long as the secondary suite is within the footprint of the house, it would "not [be] deemed to contribute to density calculations for the purpose of this policy."

* this would effectively remove the density cap established in our Official Community Plan without a necessary and informed community level review. Dwelling units are synonymous with densities but not if Bylaw 210 is adopted.

* secondary suites do not appear to be subject to Trust regulatory control which should otherwise be spelled out in Bylaw 211. As an added consequence, notification of Island Health, Agricultural Land Commission (ALC), the Electrical Inspector, and so on remains at the discretion of the landowner.

2. Secondary dwellings would be permitted via a Temporary Use Permit (TUP) in all residential zones but R1 and deemed not to effect the OCP density cap. Applicants would be using the provision for a 5% increase over the established OCP density cap currently set aside for "special needs and affordable housing."

* while special needs and affordable housing community projects would continue to be subject to rezoning, detailed Housing Agreements and a host of bureaucratic, time consuming and costly regulations, landowners could apply for these same estimated 46 densities using a streamlined process unencumbered by lengthy agreements, affordability restrictions and formal public process.

* while the Trust Office could issue Temporary Use Permits based simply on the approval of the Local Trust Committee, TUP compliance would be "complaint driven" which means the residents of Denman Island would be left to police the TUP's.

Secondary concerns:

a) with the proposed secondary suites, the term "footprint" does not appear to apply to the existing footprint of the house as required by the ALC, but to an expanded footprint no larger than 40% of the existing footprint. In fact, are there any checks on "footprint"?

b) our current bylaws do not allow vacation rentals, but the regulation is hard to find and is written in 'bylawese.' Enforcement has been a contentious problem. Given the cost of construction, subsequent secondary suites and secondary dwellings may be

used as more lucrative vacation rentals — adding to the complaint driven process already burdening our community.

c) unlike other Trust islands, the proposed secondary suites and secondary dwellings would not be limited to water rich areas. According to Bylaw 211, TUP issuance requirements include "Water supply should be addressed so as not to create negative impacts upon existing common water sources"—what does that mean when your well runs dry? Secondary suites fly under the radar.

d) Temporary Use Permits currently address the need for short-term commercial and industrial use exceptions. In proposed Bylaw 210 and 211, TUP's would become broad-sweeping land use management tools leaving behind the intent of the Official Community Plan and established regulatory processes.

Again, I request that the Denman Island Local Trust Committee pass a resolution not to proceed with Bylaws 210 & 211. I acknowledge the work which has gone into this difficult process and am sorry to be reduced to a negative role.

submitted by Harlene Holm 3900 Lacon Road, Denman Island, BC V0R 1T0

Submission by Susan-Marie Yoshihara (3906 Wren Road, Denman Island, BC) on behalf of the Denman Community Land Trust Association.

The Denman Community Land Trust Association (DCLTA) has reviewed the proposed bylaws and asks that the Denman Island Local Trust Committee not proceed with Bylaws 210 and 211 as written.

Why?

1. The proposed bylaws contain changes to the Official Community Plan and the Land Use Bylaw which are too sweeping without an initial community wide review of the OCP density and housing provisions.

2. While our present OCP allows a 5% increase over the density cap in order to accommodate special needs and affordable housing, Bylaw 210 would extend the 5% to also accommodate successful TUP applicants and Bylaw 211 would set its regulations based on this adjusted OCP. Essentially, special needs and affordable housing would need to compete with TUP's for a finite number of densities.

Also, if Bylaws 210 and 211 were adopted, special needs and affordable housing community projects would continue to be subject to costly, time consuming bureaucratic processes (four years for DCLTA's pilot project) while landowners could apply for the same densities using a streamlined process unencumbered by lengthy agreements, affordability restrictions and formal public processes.

3. Affordable, quality and secure housing is central to DCLTA's mandate and appears lacking in Bylaw 210 and 211.

⇒ without a permitting process, secondary suites could be both entirely unregulated and permanent;

⇒ Temporary Use Permits would be temporary, entirely at the discretion of the Local Trust Committee, without apparent objective criteria;

⇒ while Bylaw enforcement is a present problem, the introduction of two new complaint driven processes would be a further burden to the community.

DCLTA reminds the Local Trust Committee that, on September 24, 2013, it submitted the Rural Affordable Housing Project Final Report which included the recommendation that the LTC align Denman's bylaws to allow secondary suites on land within the Agricultural Land Reserve (over half of Denman) with Agricultural Land Commission regulations. DCLTA suggests that this alignment might be pursued.



Denman Island Local Trust Committee Minutes of Special Meeting

Date: June 25, 2016
Location: Denman Seniors Hall
 1111 Northwest Rd, Denman Island, BC

Members Present Susan Morrison, Chair
 David Critchley, Local Trustee
 Laura Busheikin, Local Trustee

Staff Present Rob Milne, Island Planner
 Vicky Bockman, Recorder

Others Present Approximately 25 members of the public

1. CALL TO ORDER

Chair Morrison called the meeting to order at 1:00 pm. She acknowledged that the meeting was being held in traditional territory of the Coast Salish First Nations. She welcomed the public and introduced herself, Trustees, staff and recorder.

2. COMMUNITY INFORMATION MEETING

Presentation by Planner Milne regarding DE-RZ-2015.1 (Pandesign - Henning Nielsen) Bylaw Nos. 219 and 220

By general consent the agenda was approved as presented.

Planner Milne provided a presentation on the process, purpose, and intent of the proposed bylaws. He reported that a new site-specific zone, R2(6), has been created with this proposal with densities in that zone limited to a maximum of three. He explained that if adopted the proposal will result in the transfer of one density to the Denman Island Density Bank to be used for affordable housing, donation of land to the Valens Brook Nature Reserve, and one density to the receiving property. He noted that there will be no net increase in overall density in compliance with the Official Community Plan (OCP) density cap, and that there would be increased protection for the identified areas of sensitive environmental values on the receiving property through a restrictive covenant registered on title.

3. QUESTION AND ANSWER SESSION

Planner Milne responded to questions with the following noted:

- If the land becomes three separate properties could each have a house and a secondary cottage resulting in six dwellings?
Secondary suites would be permitted; applications could be made for secondary dwellings through a Temporary Use Permit process which includes opportunity for public input.
- What will the density being transferred to the receiving parcel be used for?
It will be a residential density and can be used for purposes identified in the R2 zone.
- How many densities are presently on the receiving land?
Currently there are two densities and if the rezoning moves forward there will be three.
- Are density transfers to be used for affordable housing?
The Density Bank holds densities to be used exclusively for affordable housing while density transfers can be used for dedication of land for a park, donation of land for conservation purposes, and sale of land for conservation purposes.
- What is the area on the map shown below the portion that is being considered for rezoning from Forestry to Agriculture?
That is privately owned agricultural land.
- Is it possible that other densities can be moved to the receiving property area in the future?
Yes it is possible although consideration of additional densities would require a rezoning process that would include community consultation.
- What is the size of the whole receiving property, the size of the portion currently zoned Forestry, and the size of the portion currently zoned R2?
The entire property is 16.7 hectares. The two zones are nearly equal in size, however, the R2 portion is not subdividable under existing zoning as it is just under the required size threshold. Currently, the R2 zone has one density and the Forestry zone has one density associated with it. If the proposal proceeds, the property will change from two zones: R2 and Forestry to one R2(6) zone: and the transfer of the density from the donation of land to the Nature Reserve will create a total of three densities on the rezoned receiving property.
- Is there a provision in the OCP that allows for consideration of harmful effects to neighbours in the decision process?
There is no provision as such; a zone allows for a set of uses. It would be difficult to create zones to address specific impacts on particular neighbouring property owners. This would be further complicated by the possibility of neighbours changing over time.
- Will the receiving property be subject to Development Permit Area (DPA) regulations given that it is on a slope?
Yes, the R2(6) property will be subject to the Steep Slopes DPA and there will be setbacks required.

- Instead of this proposal, would it be possible to rezone to one R2 plus an R1 zone or two R1 zones and to have the transferred density in an R1 zone that would be closer to the road?
There are a number of ways that the proposal could be configured, however the community and Local Trust Committee are being asked to respond to an application that has been proposed by the applicants.
- If land were to be left in the Forestry zone would trees be left to grow?
Not necessarily; in the Forestry zone dwellings and sawmills are permitted. The Forestry zone is not a conservation zone. The R2(6) zone would preclude the possibility of a sawmill on that property.
- If the zoning changes a portion of the property from Forestry to Agriculture would there be any restrictions of the types of agricultural activity that would be allowed?
Agricultural lands in the Agricultural Land Reserve are regulated through the Agricultural Land Commission.
- Would there be an assessment of water sufficiency on the property to support the densities or possible impact on surrounding properties' water?
Currently there are no groundwater regulations in BC although the amount of water available would need to be demonstrated in the subdivision process.
- Is the land transferring to the Nature Reserve a gift or a trade and who is benefiting?
The terminology used in the proposal mirrors language in the OCP which went through a community consultation process. The community benefits by an addition to land in the Valens Brook Nature Reserve and an addition to the Density Bank and a property receives an additional density.
- Valens Brook Nature Reserve is tiny even with a 68% increase in land through this proposal; why would you call it a nature park?
This will be a Nature Reserve intended to preserve the sensitive area. It is not meant to be used actively as a park with trails.

4. PUBLIC HEARING

4.1 Recess for Public Hearing

4.1.1 Bylaw Nos. 219 and 220

By general consent the meeting was recessed at 1:46 pm to conduct a Public Hearing on Bylaw Nos. 219 and 220.

Chair Morrison left the meeting at 2:10 pm with Trustee Busheikin subsequently assuming the position of Acting Chair.

4.1.2 Recall to order

By general consent the meeting was reconvened at 4:00 pm.

5. ADJOURNMENT

By general consent the meeting was adjourned at 4:02 pm.

Susan Morrison, Chair

Laura Busheikin, Acting Chair

Certified Correct:

Vicky Bockman, Recorder



Denman Island Local Trust Committee Public Hearing Record

Date: June 25, 2016
Time: 1:30 pm
Location: Denman Seniors Hall
1111 Northwest Rd, Denman Island, BC

Members Present Susan Morrison, Chair
David Critchley, Local Trustee
Laura Busheikin, Local Trustee

Staff Present Rob Milne, Island Planner
Vicky Bockman, Recorder

Others Present Approximately 20 members of the public

1. CALL TO ORDER

Chair Morrison called the Public Hearing to order at 1:46 pm. She read the Chairperson's Opening Statement and explained that this Public Hearing is being conducted to hear views regarding proposed Bylaw Nos. 219 and 220. She asked that all comments be directed to the proposed bylaws and not to personalities and cautioned that she would halt speakers if comments become personal.

2. PROPOSED BYLAW NOS. 219 and 220 (DE-RZ-2015.1 Pandesign – Henning Nielsen)

Planner Milne read the Public Hearing Notice and explained that the intent and purpose of the proposed bylaw is to allow the transfer of approximately 2.545 hectares of land to the Islands Trust Fund to be protected as Nature Reserve, to transfer one density associated with the 2.545 hectares to a receiving property and one density to the Official Community Plan Density Bank. He pointed out the location of the speakers list, comment sheets for written comments, and Public Hearing submission box. He advised that all submissions must be received by the end of the Public Hearing.

3. PUBLIC COMMENTS

Chair Morrison opened the floor for public comments on proposed Bylaw Nos. 219 and 220.

David Innes, 6055 Lacon Road stated that he and his wife are the donating property owners. He commented that they were pleased to donate this land for conservation purposes.

Peter Thomsen, 2000 Triple Rock Road objected to the location of the receiving property additional density. He stated that the land had already been subdivided to what he thought was the maximum allowed and he considered further subdivision and rezoning to be inappropriate and unfair to adjoining neighbours. He expressed concern that this proposal has the potential to harm more than one neighbour and asked that Bylaw No. 219 Part B and Bylaw No. 220 Parts B and C be rejected in the spirit of caring for community members over financial gain for others.

Louise Bell, 3325 Kirk Road observed that this application appears to comply with the provisions of the Official Community Plan; however, she commented that she is disappointed with the proposal. She expressed her disappointment that the donor property owners did not donate more land as the remaining lot will be slightly over two hectares and may lead to a subdivision request in the future, further increasing the density in this area. She remarked on the value of a compassionate local government that would recognize the need of the adjoining neighbours and would encourage another property to be considered as a receiving property choice. She noted that this property has already been subdivided and that this change creates the potential for additional densification in the future. She faulted the mapping available to the public at various points in the process as it did not provide adequate information regarding size, zoning, covenant areas, and distinguishing property boundaries of the receiving property.

Jennifer Balke, 6411 Lacon Road supported the donation of land to the Valens Brook Nature Reserve. She commented that Valens Brook is a major salmon creek and watershed system for the neighbourhood of the donating property which will benefit from one less density as a result of this proposal. She expressed her opinion that although this proposal is legal, any process should first address the effects on the community members in the area and expressed concern that the location of the additional density would create problems for neighbours.

Shaun White, 10801 Greenhill Road objected to the location of the property receiving the increased density in the proposal, noting that it will negatively affect neighbours, stress traffic in the area, secondary dwellings could increase density further, and ground water could be negatively impacted. He expressed his opinion that the location of the receiving property should be moved or the proposal rejected.

By general consent the Public Hearing was recessed at 2:02 pm and reconvened at 2:05 pm.

Shaun White, 10801 Greenhill Road suggested a different approach be considered for future applications that would allow the community to review projects at an earlier stage prior to applicants spending large sums on expenses involved in the process.

Planner Milne responded that the applicants held a Community Information Meeting prior to an application being submitted and outlined the steps that had been taken to this point.

Bill Engleson, 4905 Trueman Place expressed his support for the bylaws, commenting that the proposal constitutes a reasonable exchange of benefits on both sides. He

remarked that the process took longer than it should have and encouraged the Local Trust Committee to approve the bylaws.

Chair Morrison asked three times for further comments from the public and there were none at this time.

By general consent the Public Hearing was recessed at 2:10 pm.

Chair Morrison left the Public Hearing at 2:10 pm with Trustee Busheikin subsequently assuming the position of Acting Chair.

By general consent the Public Hearing was recalled to order at 3:54 pm.

Henning Nielsen, 3222 Lacon Road thanked the Local Trust Committee members and staff for their diligence in the consideration of this application. He acknowledged that it has been a long process and appreciated efforts to bring this proposal to conclusion.

4. ADJOURNMENT

Chair Busheikin asked three times if there were any in the audience who wished to comment and hearing none, the Public Hearing was closed at 4:02 pm.

I CERTIFY THAT THIS IS A FAIR AND ACCURATE SUMMARY OF THE NATURE OF REPRESENTATIONS RESPECTING THE PUBLIC HEARING HELD:

Vicky Bockman, Recorder

[REDACTED]
Dennan Is. PAC. VORITO
May 26. 16

Dear Laura

as the Local Trust Committee
was one of the agencies mentioned
in the Torage Fish Groups' article,
I thought I would forward a copy
of my response to their Flagstone
article to you.

Sincerely

Jayne Ann

Re: Driving on the Beaches

My daughter-in-law's parents have worked an oyster lease on Denman Island's west side for nearly 20 years. They are Vietnamese. They work very hard at a very hard job. They have been luckier than some of Denman's other lease holders in that they were once allowed to access the beach from the adjacent land owner's property but that property is now for sale, therefore access is no longer available. They could sometimes haul their equipment by foot down to the lease from the road but when they are bringing harvested oysters off of the beach to fill an order, they need a vehicle.

I can understand wanting to restrict unnecessary traffic from the beaches, say the Sunday driver type, if there are that many. But to restrict the lease holders from their work sites seems a bit harsh for an already difficult job. Having to pay a Mac's Oyster employee \$25. an hour to bring them over and back would double their travel expenses, as well as being a less than practical situation.

I understand that 75% of B.C.'s oysters come from Baynes Sound. That is no doubt why Mac's Oysters and Baynes Sound Oysters are located right across the water from us. This is the oyster growing capital of the coast. Is Denman Island's coast as specialized a locale for the Pacific Sand Lance and Surf Smelt, or are they able to thrive up and down B.C.s west coast other than on Denman Island? I believe we need to support the specialness of our local oyster and clam trade instead of making their work even more expensive or difficult than it is. These are not rich people.

I would hope that the lease holders would be willing to compromise their vehicle traffic on the beach, but if locked bollards are being installed to minimize the beach traffic, then give the lease holders keys to allow them access to their livelihood when necessary.

Jayne-Ann O'Reilly

Cc DFO, Island Trustee, CVRD, Ministry of Transportation and Infrastructure
Operations

Driving on the Beach FAQs *By Dorrie & Edi - Denman Island Forage Fish Group*

Do vehicles driving on the beach damage the marine environment?

Yes, according to DeGrave et al. (1998) as mentioned in the Canadian Science Advisory Secretariat Research Document 2001/125. Compaction makes the upper intertidal forage fish spawning areas incompatible for depositing eggs and any eggs present (for weeks while incubating) may be crushed. Shorebirds are also discouraged by traffic which crushes food sources they rely on for survival and makes nesting risky. Also, the spreading of invasive plants (Spartina) by vehicle tires is likely to happen.

Do we know if forage fish spawn on the beaches being driven on?

Yes, Marine Biologist and Forage Fish Specialist Ramona de Graaf BSc, MSc. at foragefish.bc@gmail.com has documented evidence from a 5 yr. window that both Pacific Sand Lance and Surf smelt spawn on our beaches.

How important are forage fish?

Forage fish are the cornerstone of the marine foodweb with sand lance making up 50% of the diet of coho (an endangered species), as well as cod, eagles, herons and sand lance and surf smelt are as important as herring (another forage fish). Both Pacific Sand Lance and Surf Smelt are recognized as a CRA- Commercial, Recreational and Aboriginal fishery and as such, are protected (including their spawning areas) by the Fisheries Act. Destroying their habitat is unlawful. The Canadian Science Advisory Secretariat Review of Surf Smelt Fisheries states- *"There is some indication that surf smelt stocks in BC have been declining for four decades and a precautionary management plan should be initiated, especially given inadequate assessment data."*

Could driving on the beach happen when they don't spawn?

No, the issue is ongoing compaction and to accurately determine when both species aren't spawning would require a biologist doing immediate survey work on the beach in question. Surf smelt can spawn all year round whereas sand lance generally spawn from November to February <http://www.env.gov.bc.ca>.

I have hardly ever seen anyone driving on the beach, how frequent is it?

This time of year it happens daily and we now have permanent, established "beach roads" on the west side of Denman exactly where forage fish would like to spawn. As well, salt marshes are incredibly important to the environment but are also being negatively impacted by vehicles driving through them. The sooner we stop driving on our beaches, the better.

Don't shellfish growers need and have a right to drive on

the beach?

No, the areas they are driving in are W1 Marine Conservation which driving is not listed as an acceptable use. The Local Trust has proposed a bylaw amendment that would specify no vehicles in W1 zones. The W1 areas are not DFO jurisdiction and the Shellfish Conditions of License states- 10.3 *The licence holder shall not conduct aquaculture activities that would disturb Pacific Sand Lance spawning substrates (sand) in upper intertidal (above 2.6m) during spawning windows.*

Why isn't DFO involved in protecting forage fish habitat?

Due to the change in policy over the last decade, DFO has been in a conflict of interest where it's priority is to "promote" fisheries instead of protecting them. We're hoping that with the new federal government, protection might be the #1 priority once again.

What is the plan to protect our beaches and if the beaches are "blocked", will I still be able to enjoy them?

The plan is to meet with all jurisdiction agencies such as the Local Trust Committee, CVRD and the Min. of Transportation and Infrastructure Operations to firstly, educate those who choose to drive on the beach as to the possible negative impacts of their actions and if that fails, to install bollards similar to our park entrances at key locations where the road meets the beach. There will be no changes to beach access roads or parking areas and keys to unlock the bollards will be made available to emergency responders. Any form of non-motorized use such as horses, bikes, strollers and those carrying personal watercraft etc. will have full access.

How are shellfish growers supposed to get to their tenures if they can't drive?

Most use work boats and a survey done only identified a few who said they don't have a boat and drive. We have identified a boat and operator for hire for \$25 per hr. available at Mac's Oysters. If you consider the cost of a ferry and time involved in driving over from Vancouver Island, (and you have the equipment that comes with the boat and an extra hand), Mac's makes sense. As well, the processing plants (like Mac's) routinely pick up the harvested product from the beach. All other works can be carried out with a wheelbarrow from any one of the beach access points. This is how tons of debris is removed from our beaches every year by our residents and visitors.

What should I do if I see someone driving on the beach?

Write down their vehicle description and license plate number and report them to the DFO Record, Observe and Report line at 1-800-465-4336 FMI-edijohnston@gmail.com

STAFF REPORT

Date: June 29, 2016

File No.: DE-DVP-2016.1 & DE-TUP-2016.1

(Citizen Design Build Inc.)

To: Denman Island Local Trust Committee
For meeting July 5, 2016

From: Marnie Eggen, Planner 2

CC: Ann Kjerulf, Regional Planning Manager
Rob Milne, Island Planner

Re: Development Variance Permit & Temporary Use Permit – PID: 000-980-820;
Lot 3, Section 13, Denman Island, Nanaimo District, Plan 38716

Owner: Quinn Lundberg

Applicant: Citizen Design Build Inc.

Civic Address: 3131 Jemima Road, Denman Island

THE PROPOSAL:

The applicant has applied for a Development Variance Permit for a number of proposed buildings and structures, and one of the buildings is a proposed secondary dwelling unit ("guest house") for which they have also applied for a Temporary Use Permit. As such both applications are brought forward together for Local Trust Committee consideration.

DVP:

The applicant requests to vary Section 2.3.2 of the Denman Island Land Use Bylaw No. 186 in order to allow the new construction of a single family residence (SFD) (replacing an existing SFD), a home office, a guest house, drilled well, and sewerage system (to replace an existing sewerage system) within the 60 metre (196.9 feet) setback to Graham Lake and the 30 metre (98.4 feet) setback from a stream for a sewerage system. The applicant is requesting a variance of 40 metres (131.2 feet) from Graham Lake and 15 metres (49.2 feet) from a stream for a sewerage system. The request for the variances intends to encompass three buildings, drilled well, and a sewerage system that are proposed at various distances, but no closer than 40 metres. Staff note that the septic field is proposed at 49.8 metres from Graham Lake (see Attachments).

The applicant has provided reasons for requesting the variances: "A variance is required for residential development on this property because the above mentioned setbacks overlap each other and encompass the cleared area where the existing principle residence and yard are located. There are two areas on this property where siting buildings and services are possible: Within the existing clearing between Graham Lake and the stream OR above Graham Ridge adjacent to Jemima Road. The latter is an entirely undeveloped forested area and it is our intention to keep tree removal and development in this area to an absolute minimum. The existing clearing is an obvious choice for proposed structures, as minimum tree removal and environmental disturbance will be required and it keeps the SFD and accessory buildings in

close proximity. However, the setbacks laid out in the land use bylaw leave no room for construction or wastewater systems in this area without acquiring a variance.”

Please see Attachments for the whole Development Variance Permit Application, plus supplemental information submitted more recently.

TUP:

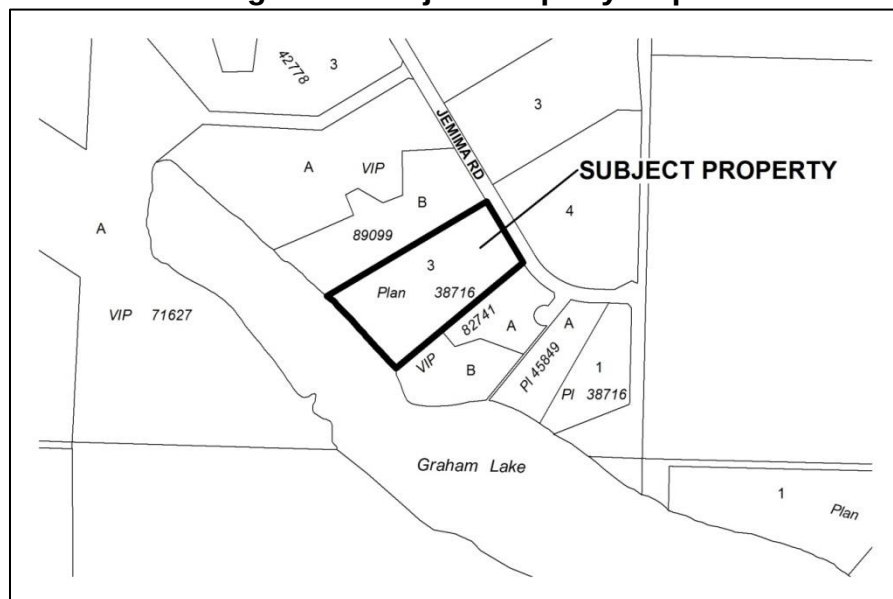
The applicant has also applied for a Temporary Use Permit for the purposes of allowing a secondary dwelling unit that otherwise would not be permitted under Denman Island Land Use Bylaw No. 186. The applicant has applied for the TUP for the following reasons: “The intended use of the secondary dwelling is for potential accommodation for the owner’s relatives currently residing on Denman Island. The main bedroom and bath has been designed with accessibility in mind, so that adaptations can be made easily to suit special needs housing. The dwelling can also provide an affordable rental opportunity for a property caretaker. The intended uses of the secondary dwelling listed above allow us to keep the gross floor area of the principle dwelling lower by reducing the number of bedrooms required and providing a separate accommodation option for relatives or others.”

The Local Trust Committee may issue a permit that allows activities to take place under the conditions specified in the permit, including the posting of a security to ensure compliance with the terms of the permit. Under a TUP, the specified uses may be carried out for a period of up to three years and the permit may be renewed only once for a maximum of three years. Issuance of a TUP should not be interpreted as support for a zoning change.

SITE CONTEXT:

The property is located on Jemima Road and fronts Graham Lake.

Figure 1: Subject Property Map



An existing single family dwelling, sewerage system and an accessory building are located on the property. The majority of the property is more or less treed, with the exception of the area proposed for development. The property is accessed via a shared driveway that traverses the properties to the east. See Figure 2 below.

Figure 2: Aerial Photo of Subject Property



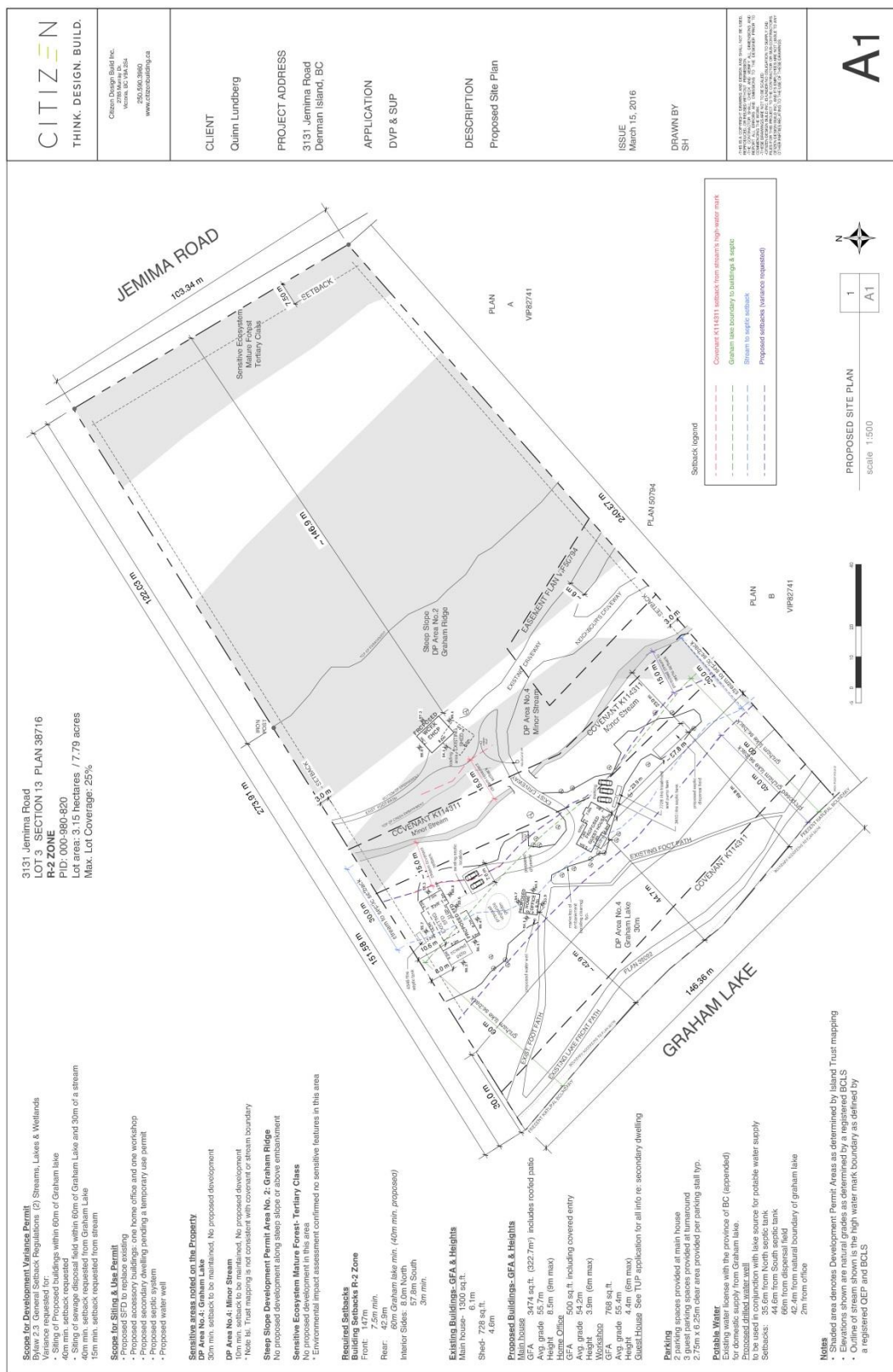
The subject property is bisected by Cicero Slough Creek (see figure 3 below).

Figure 3: Cicero Slough Creek



The subject property generally slopes downhill from Jemima Road down to Graham Lake. A Steep Slopes Development Permit Area and two Lake, Stream and Wetlands Development Permit Areas are mapped over the property. There are Denman LUB setbacks to Graham Lake and Cicero Slough Creek that overlap. Additionally, there are covenanted areas protecting the stream and Graham Lake, and an easement for shared driveway use (see Figure 4 below). Due to overlapping LUB lake and stream setbacks, there is virtually no buildable area on the lower half of the property, without obtaining a variance.

19



CURRENT PLANNING STATUS OF SUBJECT LANDS:

Islands Trust Policy Statement:

The following policies pertain to the **DVP** application:

3.3 Freshwater and Wetland Ecosystems and Riparian Zones

Directive

Policy

3.3.2 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address means to prevent further loss or degradation of freshwater bodies or watercourses, wetlands and riparian zones and to protect aquatic wildlife.

4.4

Freshwater

Resources

Directive

Policies

4.4.2 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure:

- neither the density nor intensity of land use is increased in areas which are known to have a problem with the quality or quantity of the supply of freshwater,
- water quality is maintained, and
- existing, anticipated and seasonal demands for water are considered and allowed for.

4.4.3 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure water use is not to the detriment of in-stream uses.

The following policies pertain to the **TUP** application:

5.2 Growth and Development

Directive Policies

5.2.5 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address means for achieving efficient use of the land base without exceeding any density limits defined in their official community plans.

5.2.6 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the identification of areas hazardous to development, including areas subject to flooding, erosion or slope instability, and strategies to direct development away from such hazards.

5.8 Health and Well-being

Directive Policies

5.8.6 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address their community's current and projected housing requirements and the long-term needs for educational, institutional, community and health-related facilities and services, as well as the cultural and recreational facilities and services.

Official Community Plan

The subject property is designated Rural.

Development Permit Areas (DPA) No. 2 (Steep Slopes) and No. 4 (Streams, Lakes and Wetlands) are mapped on the property (see Figures 5 and 6 below). Staff note that the stream mapping for DPA No. 4 is inconsistent with the covenant on the stream boundary (see Figure 4 above for site plan); however, for clarity, the DPA is not triggered because the proposed development is more than 10 metres away from the minor stream boundary. Staff confirm that the proposed development is not located within any Development Permit Areas.

Figure 5: DPA No. 2: Steep Slopes

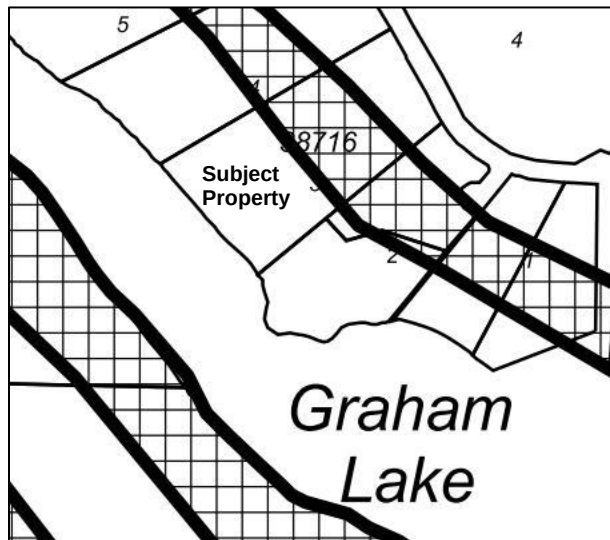
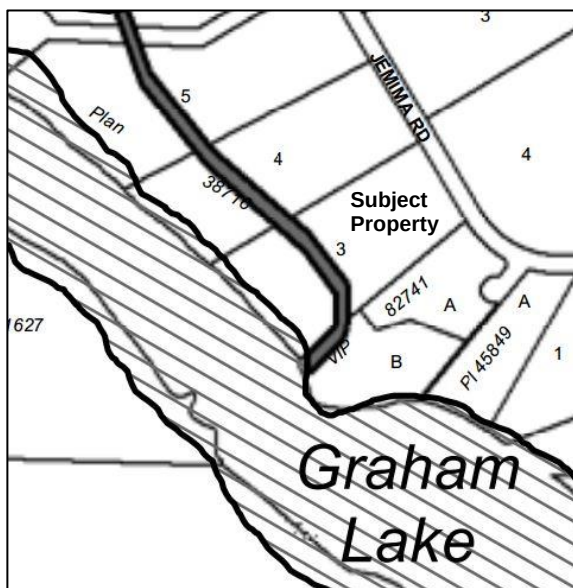


Figure 6: DPA No. 4: Streams, Lakes and Wetlands



The following policies are pertinent to the **DVP** application:

Freshwater - Policies

Policy 1 The protection and retention of riparian and aquatic habitat is encouraged.

Policy 2 Adequate setbacks should be maintained to discourage development encroachment on riparian habitat and reduce pollution of this habitat.

Housing – Policies, Siting

Policy 21 Zoning regulations should establish setbacks for buildings and other structures from lot lines, and should establish sufficient setbacks to protect watercourses on Denman Island and to protect development from flooding or other such hazards. In the case of fish-bearing or potential fish-bearing streams setbacks should be adequate to protect the riparian habitat consistent with the *Riparian Area Regulation* under the *Fish Protection Act*.

Policy 23 Zoning regulations should establish sufficient setbacks for septic disposal systems:

- to ensure that the waste water has been cleaned before entering the sea, wetlands, lakes and other watercourses; and
- to protect adjacent properties from effluent or odours.

The following objectives and policies pertain to the **TUP** application:

Housing - Objectives

Objective 1 To ensure that housing options are sensitive to ground water availability and sewage disposal capability, guard against contamination of ground water and preserve the rural nature of Denman Island.

Objective 2 To ensure housing options preserve human diversity in the community.

- Objective 3 To set the maximum for the overall residential density of the Island as the residential density possible with the zoning regulations in place at the time of adoption of this Plan while providing flexibility for a range of dwelling types.
- Objective 4 To support the establishment of affordable housing, rental opportunities and special needs housing and provide the opportunity for Island seniors to remain in the community, especially in their own or their families' homes.

Housing – Policies, Use and Density

- Policy 10 In the Rural designation zoning regulations should generally permit one dwelling unit per lot, including a secondary suite, provided that the land owner provides the Local Trust committee with proof of adequate water supply for each dwelling unit without endangering the water supply of adjacent land owners. A secondary dwelling unit may be permitted on a lot if approved by a Temporary Use Permit.
- Policy 11 The overall residential density on Denman Island should generally not increase beyond that permitted by existing zoning on the date this Plan was adopted except that an increase of approximately 5 percent may be permitted to accommodate zoning amendments for special needs and affordable housing, secondary dwelling units approved by the Denman Island Local Trust Committee under a Temporary Use Permit and site-specific zoning amendment applications under Policy 29 of this Section.
- Notwithstanding the foregoing, secondary suites contained within the footprint of conforming dwelling units are not deemed to contribute to density calculations for the purposes of this policy.
- Policy 15 The Local Trust Committee may approve secondary dwelling units on lands within the “Rural” and “Sustainable Resources” designations through a Temporary Use Permit in order to address housing objectives as defined in the Official Community Plan.
- Policy 16 Landowners are encouraged to cluster houses and buildings accessory to a residential use to leave areas of undeveloped space.

Land Use Bylaw

The subject property is zoned Rural Residential (R2).

Section 2.3.2 of the Denman Island Land Use Bylaw (LUB) is requested as follows:

- To reduce the setback to Graham Lake from 60 metres (196.9 feet) to 40 metres (131.2 feet) to allow a single family dwelling, a home office, a guest house, and a sewerage system; and
- To reduce the setback from 30 metres (98.4 feet) to a stream to 15 metres (49.2 feet) to allow a sewage system.

Both the setback to Graham Lake and to streams has been in place since at least 1992, as per LUB No. 65, 1992.

Under Section 5 of the LUB, the Local Trust Committee may issue Temporary Use Permits (TUPs) for secondary dwelling units on lands zoned as “R2” (Rural Residential), “A” (Agriculture), “F” (Forestry) and “RE” (Resource). The Objective of this TUP is to allow secondary dwelling units where they are considered appropriate to address housing objectives

as defined in the Official Community Plan. The issuance of the TUP to allow a secondary dwelling unit, is subject to five guidelines. The application has been reviewed for these required items in the following table.

Table 1: Review of Temporary Use Permit Guidelines

Item	Submitted	Compliant	Comments & Conditions of Permit
Guideline 1 Upon application, Temporary Use Permits may be considered for all parcels of land zoned as "R2" (Rural Residential), "A" (Agriculture), "F" (Forestry) and "RE" (Resource) by the Denman Island Land Use Bylaw.	Yes	Yes	Subject property is zoned "R2"
Guideline 2 Compliance with the requirements of the Secondary Suites and Accessory Dwellings" regulations of Part 2.1, "General Regulations", is a condition of approval:			
6.a floor area max. of 140 sq m (1506.9 sq ft).	Yes	Yes	6.a 121 sq m (1305 sq ft) floor area proposed = OK . Condition included in permit.
6.b Max. 60 m from the principal residence unless approved by the LTC as a condition of the permit.	Yes	Yes	6.b 41.4 m (135.8 ft) = OK . Condition included in permit.
6.c Be connected to an approved sewerage system.	Yes	No, subject to approval of DVP.	6.c "Authorized Person" as per the <i>Sewerage System Regulations</i> proposed waste water system designed for site. Proposed location of sewerage system does not comply with setback to Graham Lake and streams in Denman LUB; applicant has applied for DVP. Island Health is concerned about the proximity of increased development to a community drinking water source. Professional geoscientist report included as condition in draft TUP, should the LTC approve the DVP.
6.d Include a rainwater catchment and storage system for a capacity of at least 1,000 gallons unless approved by the LTC as a condition of the permit.	No	Subject to LTC approval.	6.d No rainwater catchment system proposed, because of site constraints and proposed water plan is to use existing water licence that allows for 1,000 gallons a day for two dwellings. Also, a drilled water well is proposed in conjunction with the water licence. Rainwater catchment system is not added as a condition in draft TUP.

Item	Submitted	Compliant	Comments & Conditions of Permit
7. A written plan for the supply of water is to be provided that demonstrates an adequate supply of potable water prior to the issuance of any permits to allow the use.	Yes	Yes	7. Propose to use lake source. Existing water licence (issued in 1987) (see Attachments) for 1,000 gallons a day authorizing the use of water for domestic purposes for two dwellings. Also, a drilled water well is proposed in conjunction with the water licence. Written water supply plan and water licence included as condition in draft TUP.
8. Where water is supplied to a secondary dwelling unit by a community water system, the operator of the community water system must provide written confirmation that it has sufficient capacity prior to the issuance of any permits to allow the use.	N/A	N/A	8. Water will not be supplied via community water system.
9. Where water is to be supplied from a surface water body, a water license, issued by the Province, must permit the withdrawal of the required amount of water prior to the issuance of any permits to allow a secondary dwelling unit.	Yes	Yes	9. Existing water licence (issued in 1987) (see Attachments) for 1,000 gallons a day authorizing the use of water for domestic purposes for two dwellings. Also, a drilled water well is proposed in conjunction with the water licence. The owners should note that any time two dwellings share a common water supply they are considered to be a "community water system" under the provisions of the <i>Health Act</i> and must comply with the requirements of the <i>Act</i> . Written water supply plan and water licence are included as conditions in the draft TUP.
Guideline 3 Applications for Temporary Use Permits may be referred to the Advisory Planning Commission, which may be requested to provide an opportunity for public input to be received and considered in preparing its recommendations.	N/A	N/A	Staff have not identified a need to refer application to APC.
Guideline 4 Where approvals are required from other agencies, these should be obtained prior to the issuing of a Temporary Use Permit.	N/A	N/A	No approvals from an approving agency are required.
Guideline 5 The general conditions for issuing a Temporary Use Permit are as follows: a) Adequate off-road parking should be provided;	Yes	Yes	Proposed plan includes two parking spaces/single family dwelling and three parking spaces/secondary dwelling unit, exceeding number of required spaces. Condition included in draft TUP.

Item	Submitted	Compliant	Comments & Conditions of Permit
b) There should be adequate provision for approved waste disposal before consideration is given by the Local Trust Committee;	Yes	No, subject to approval of DVP.	"Authorized Person" as per the <i>Sewerage System Regulations</i> proposed waste water system designed for site. Proposed location of sewerage system does not comply with setback to Graham Lake and streams in Denman LUB; applicant has applied for DVP. Island Health is concerned about the proximity of increased development to a community drinking water source. Professional geoscientist report included as condition in draft TUP, should the LTC approve the DVP.
c) Water supply should be addressed so as to not create negative impacts upon existing common water sources;	Yes	Yes	Existing water licence (issued in 1987) (see Attachments) for 1,000 gallons a day authorizes the use of water for domestic purposes for two dwellings. Also, a drilled water well is proposed in conjunction with the water licence. Written water supply plan and water licence are included as conditions in the TUP.
d) Other requirements that the Local Trust Committee may consider appropriate.	Yes	Subject to LTC consideration	In consideration of the close proximity of development to the riparian areas, staff suggest to include the QEP report as a condition in permit, as it outlines measures to be taken during construction and into the future to protect the riparian areas. Any other requirements that the LTC consider appropriate should be considered as a condition of permit.

For the applicant to obtain a TUP, the property must comply with zoning as outlined in the LUB. The proposed development meets the bylaw requirements, with exception of required setbacks to Graham Lake and Cicero Slough Stream, for which variances are requested.

Islands Trust Fund:

The application does not directly affect any Trust Fund Board property or conservation covenant.

Regional Conservation Plan:

There are no identified interests in the immediate area pertaining to the Islands Trust Fund Regional Conservation Plan.

Sensitive Ecosystems:

A wetland sensitive ecosystem is mapped along the shoreline of Graham Lake. The proposed construction is not located within the sensitive ecosystem.

Riparian Areas:

A qualified environmental professional (QEP), (Aqua-Tex Scientific Consulting Ltd.), was hired by the applicant to conduct a Riparian Areas Assessment Report (see Attachments). Even though the proposed development didn't trigger a Development Permit under the Denman Island LUB, an Assessment Report under the *Riparian Areas Regulation* is triggered because development is proposed within 30 metres of the small stream, locally known as Cicero Slough Creek. Although no new development is proposed within 30 metres of Graham Lake, it was included in the assessment for completeness and as a guide to future development on the property. The report indicates a Streamside Protection and Enhancement Area (SPEA) of 10 metres on either side of the small stream of Cicero Slough Creek and a SPEA of 15 metres for Graham Lake. No development is proposed within the SPEAs.

Important measures are recommended by the QEP to be under taken outside of the SPEA during construction and with regard to future development to protect the SPEA.

Additionally, the QEP notes that the proposed septic field location lies approximately 20 metres away from the stream, outside of the stream ravine, the SPEA, and the 10 metre covenanted area. Additionally, the QEP notes the importance of the intact vegetation between Graham Lake and the proposed septic field. The QEP anticipates no ecological impacts from the proposed septic field location, and recommends that the vegetation between Graham Lake and the septic field remain intact, acting as a buffer.

Hazard Areas:

Between the proposed construction and Jemima Road is the Steep Slopes Development Permit Area (DPA), and no construction is proposed in the DPA.

Archaeological Sites:

No archaeological sites are mapped within 100 metres of the proposed construction.

Covenant and Easement:

A covenant is registered on the property and charged to the Ministry of Transportation and Infrastructure. It stipulates no building within 15 metres of Cicero Slough Creek and no building within 7.5 metres of Graham Lake, and a minimum height of the underside of a floor of 1.5 metres above the natural boundaries. Additionally, it stipulates no disturbance of vegetation within 7 metres of Graham Lake or within 6.1 metres within Cicero Slough Creek. Proposed construction is not sited within the covenanted areas.

An easement is registered on the property to allow two neighbouring properties access to a driveway and residential services over the subject lot. This easement does not allow for any development within its boundaries and no development within this area is proposed.

Bylaw Enforcement:

There are no bylaw enforcement files associated with this application.

Climate Change Mitigation and Adaptation

Along with climate change come extreme weather events, such as flooding and erosion. While staff cannot predict what if any effects of climate change this site may be subject to in the future, it is important to point out that an increased level of development is being proposed between a creek (upslope of proposed development) and a lake and community drinking water supply (downslope of development), and that the setback to each waterbody is requested to be reduced, where development is not otherwise allowed.

Shoreline

Staff note that the QEP report states that the area of land between the proposed development and the shoreline of Graham Lake is well vegetated providing a “good vegetative buffer between the proposed development activities which will utilize an existing disturbed area which lies a minimum of 40 metres from the lakeshore.”

Septic System

A report prepared by a professional geoscientist (H₂O Environmental Ltd.), dated March 8, 2016 and an Addendum, dated June 24, 2016 were provided as a part of the application and in accordance with the *Sewerage System Regulation* and the *Sewerage System Standard Practice Manual*, which investigated the reduction in setbacks for a proposed wastewater system that was specific for the site (see Attachments). A rationale is provided concluding that reduced setbacks from the proposed wastewater dispersal field to the stream from 30 to 15 metres and the setback to Graham Lake from 60 metres to the proposed 49.8 metres “will not likely cause an environmental hazard.” The report also concludes that the area between the wastewater dispersal field and the lake should remain undisturbed for optimal nitrogen and phosphorus reduction. No maintenance plan for the septic system is proposed in the report.

Staff has been in communication with Island Heath, who has indicated concern for the proximity of the proposed sewerage system to a community drinking water source. Additionally, Graham Lake Improvement District is embarking on the development of a Watershed Management Plan for Graham Lake. The Improvement District and Island Health indicate concern about issuing a variance for the sewerage system prior to having a Watershed Management Plan in place.

Water Supply

The subject property has an existing water licence, issued in 1987, (see Attachments) for 1,000 gallons a day authorizing the use of water for domestic purposes for two dwellings.

Existing Buildings and Sewerage System within Setbacks

Staff note that there is an existing dwelling and sewerage system located on the property. A Siting and Use Permit was issued for the existing two bedroom house and sewerage system in 1993, for which the site plan illustrated that the development was compliant with the same setbacks that exist today. According to the site plan provided for the DVP, the dwelling is located partially within the setback (60 metres) to Graham Lake and the sewerage system is located within the setback (30 metres) to a stream. Staff note that upon further verification, any portions of the dwelling and the sewerage system that are located within the setbacks are non-compliant with the bylaw. The DVP application includes the removal of the existing dwelling and the sewerage system.

COMMUNITY INFORMATION MEETING(S):

Community information meetings are not required for Development Variance Permit or Temporary Use Permit applications.

RESULTS OF CIRCULATION:

Copies of the proposed development variance permit, proposed temporary use permit and associated notices were sent to adjacent property owners (see Attachments for proposed permits and notices). The temporary use permit notice was also published in *The Hornby – Denman Island Grapevine* on June 23, 2016.

At the time this staff report was prepared, two comments from the community had been received for the development variance permit (see Attachments). The Graham Lake Water Improvement District is unsupportive of the request for the variance to setbacks from the septic system to Graham Lake. Also, Island Health, the regulating authority over sewerage systems and drinking water also provided comments that are unsupportive of the request for the variance. Any further comments received will be presented at the July 5, 2016 LTC regular business meeting.

STAFF COMMENTS:

Staff does not recommend approval of the DVP or the TUP as described below.

Overall Intent of the Proposed Variances:

The proposed variances include reducing the setback to Graham Lake from 60 metres to 40 metres to allow buildings and a sewerage system, and reducing the setback to a stream from 30 metres to 15 metres allow a sewerage system. The overall intent of these setback regulations, as contemplated in the OCP, is to provide “protection and retention of riparian and aquatic habitat” and “that zoning regulations...should establish sufficient setbacks to protect watercourses on Denman island and to protect development from flooding...,” and “that zoning regulations should establish setbacks for septic disposal systems to ensure that the waste water has been cleaned before entering ...lakes and other watercourses,” also “in the case of fish-bearing or potential fish-bearing streams setbacks should be adequate to protect the riparian habitat consistent with the *Riparian Area Regulation*...” The setback regulations are also supported by policies 3.3.2 and 4.4.2 in the Islands Trust Policy Statement. Both the setback to Graham Lake and to streams have been in place since at least 1992, as per LUB No. 65, 1992.

The setback to Graham Lake is a much larger setback than other setbacks to lakes (except Chicadee Lake) or streams. This is likely in recognition of its value to the community, particularly because it is a drinking water supply for 87 households of Denman, and also for its ecological and recreational values. The setback to streams for sewerage systems is larger than setbacks for buildings and structures, likely in recognition of the potential increased health and environmental hazard these systems pose to streams.

Residential Development, Sewerage and Community Drinking Water Supply:

Staff recommends that the proposed variances are not approved for the following reasons:

- Increased development is proposed within setbacks to a lake with high value to the community, particularly its value as a drinking water supply for 87 households. While an improved and upgraded sewerage system is proposed for the site, the overall increased development could result in increase vehicle traffic, removal of native vegetation, and addition of non-native plant species and potential toxins from the development and maintenance of two homes, and associated lawns and gardens, all in closer proximity than what is currently allowed under the Denman Island Land Use Bylaw.
- The applicant states that there is a second potential location for development closer to Jemima Road that, according to the site plan provided, is approximately the same size of

area as the one currently proposed for development. The applicant's rationale for not choosing the alternative site is to minimize tree removal and environmental disturbance, while utilizing the already developed and cleared area closer to Graham Lake. Staff note that there are relatively more sensitive ecosystems located where the development is proposed for which there are setbacks established. The alternative site is not impeded by such setbacks, and the Steep Slopes Development Permit Area is intended to guide appropriate development not prevent it. Staff note that the geoscientist suspects that shallow soils exist in the alternate site; however, they have proposed an enhanced sewerage system specifically for the proposed site where shallow soils are confirmed.

Draft DVP and Covenant:

Staff have drafted a DVP based on the proposed development, should the LTC choose to approve it; however, staff recommend that should the LTC approve the DVP, that at the least, assurances, with regard to the proper operation of the sewerage system and protection of the riparian areas, be required by way of a restrictive covenant that is registered prior to issuance of the DVP. Staff highlight that a restrictive covenant is a tool that can be considered reactive in nature in comparison to setback regulations. A covenant can require certain provisions that are enforceable such as the ones proposed below; however, enforcement only comes into play if the covenant is breached, and in this case, potentially subjecting the drinking water source to risk of contamination. Alternatively, setbacks proactively restrict development in areas where it is not deemed appropriate.

Covenant Conditions Regarding the Sewerage System:

- No removal of vegetation and no soil disturbance between the septic field and Graham Lake as recommended by H₂O Environmental Ltd. and Aqua-Tex Scientific Consulting Ltd.; and
- That the proposed sewerage system is designed, installed and appropriately maintained and monitored according to a 'Maintenance Plan' prepared in accordance *BC Sewerage System Regulation* and the *Sewerage System Standard Practice Manual*.

Covenant Conditions Regarding the Riparian Areas:

The RAR report concludes a Streamside Protection and Enhancement Area (SPEA) of 10 metres on either side of the small stream of Cicero Slough Creek and a SPEA of 15 metres for Graham Lake. No development is proposed within the SPEAs. In recognition of the following:

- The close proximity of the proposed buildings and sewerage system to Cicero Slough Stream and Graham Lake within setback areas as per the Denman Island Land Use Bylaw No. 186, but outside the set SPEAs;
- The policies regarding the protection of watercourses and riparian areas; and
- In the absence of a Development Permit that can incorporate the recommendations of a RAR Assessment Report, including the recommended measures that must be undertaken during construction and with regard to future development to protect the SPEA.

Staff recommend that should the LTC approve the DVP, that assurance with regard to the following be required by way of a restrictive covenant that is registered prior to issuance of the DVP:

- That the proposed construction and future use of the property is in accordance with report "Development Permit Report: Streams, Lakes and Wetlands," dated March 17, 2016, prepared by Aqua-Tex Scientific Consulting Ltd.

Housing

The recent changes to the Denman OCP and LUB that allow, in certain zones, secondary suites out right and secondary dwelling units with a TUP are a result of the community's interest in addressing housing needs on Denman Island. The proposed secondary dwelling unit is the first TUP application to be considered by the LTC, and as such is within the allowable 5 percent increase stipulated for this purpose as per the OCP policies. The intention of the proposed secondary dwelling unit is to provide housing for the owner's parents (residents of Denman), which is consistent with the intent of the TUP for secondary dwelling units. The TUP guidelines are met; however, the secondary dwelling is proposed to be sited within setbacks and requires approval of a DVP. Staff is not recommending issuance of the DVP and therefore not recommending issuance of the TUP. A TUP has been drafted and public notification requirements are satisfied. The draft TUP incorporates conditions as stipulated by the TUP guidelines should the LTC approve the DVP and TUP.

RECOMMENDATIONS:

1. **THAT** the Denman Island Local Trust Committee not approve the issuance of Development Variance Permit TH-DVP-2016.1.
2. **THAT** the Denman Island Local Trust Committee not approve the issuance of Temporary Use Permit DE-TUP-2016.1.

Alternatively:

1. **THAT** the Denman Island Local Trust Committee approve Development Variance Permit TH-DVP-2016.1 conditional upon registration of a restrictive covenant, that is granted to the Denman Island Local Trust Committee in priority to all financial charges and that is delivered in a form satisfactory to the Denman Island Local Trust Committee, and that stipulates the following:
 - a. No removal of vegetation and no soil disturbance between the septic field and Graham Lake as recommended by H2O Environmental Ltd. and Aqua-Tex Scientific Consulting Ltd.;
 - b. that the proposed sewerage system is designed, installed and appropriately maintained and monitored according to a 'Maintenance Plan' prepared in accordance BC Sewerage System Regulation and the Sewerage System Standard Practice Manual; and
 - c. that the proposed construction and future use of the property is in accordance with report "3131 Jemima Road Denman Island Development Permit Report: Streams, Lakes and Wetlands," dated March 17, 2016, prepared by Aqua-Tex Scientific Consulting Ltd.
2. **THAT** the Denman Island Local Trust Committee approve Temporary Use Permit DE-TUP-2016.1 for a period of three (3) years from date of issuance, subject to the following conditions:
 - a. maximum floor area of the secondary dwelling unit shall not be more than 122 square metres;

- b. the secondary dwelling unit shall not be located more than 42 metres from the principal residence;
 - c. the owner must provide accommodation for a minimum of one vehicle for the secondary dwelling unit;
 - d. the secondary dwelling unit shall be connected to an approved sewerage system in accordance with the report "Wastewater System Setback Reduction Study," dated March 8, 2016, prepared by H2O Environmental Ltd. as shown on Schedule "A3" attached to and forming part of this permit;
 - e. potable water shall be supplied in accordance with the "Temporary Use Permit Proposed Site Layout," and "Potable Water Supply Plan," prepared by Citizen Design Build Inc. as shown on Schedules "A1," "A4" & "A5" attached to and forming part of this permit;
 - f. the construction of the secondary dwelling unit and future use of the land surrounding the secondary dwelling unit shall be in accordance with report "Development Permit Report: Streams, Lakes and Wetlands," dated March 17, 2016, prepared by Aqua-Tex Scientific Consulting Ltd. as shown on Schedule "A6," attached to and forming part of this permit;
 - g. the secondary dwelling unit is not permitted to be used for short term vacation rental or for the accommodation of paying guests in accordance with Regulation 2.1.2 of the Denman Island Land Use Bylaw;
 - h. the holder of the Permit will be held accountable for any violation of the conditions of this Permit; AND
 - i. conditions a) through h) apply to the proposed guest house and sewerage system as shown on Schedules "A1" and "A2" attached to and forming part of this permit.
3. **THAT** the Denman Island Local Trust Committee request staff to enter into a cost recovery agreement allowing Islands Trust legal counsel to draft and/or review a covenant for property PID: 000-980-820; Lot 3, Section 13, Denman Island, Nanaimo District in respect of Development Variance Permit TH-DVP-2016.1.
4. **THAT** the Denman Island Local Trust Committee request staff to request Aqua-Tex Scientific Consulting Ltd. to submit "3131 Jemima Road Denman Island Development Permit Report: Streams, Lakes and Wetlands," dated March 17, 2016 to the provincial Ministry as per section 4(2) (b) of the *Riparian Areas Regulation*.

Prepared and Submitted by:

M. Eggen

June 29, 2016

Marnie Eggen, Planner 2

Date

Concurred in by:

Ann Kjerulf

June 30, 2016

Ann Kjerulf, Regional Planning Manager

Date

Attachments:

1. Development Variance Permit Application
 2. Proposed Development Variance Permit
 3. Development Variance Permit Notice
 4. Temporary Use Permit Application
 5. Proposed Temporary Use Permit
 6. Temporary Use Permit Notice
 7. Development Permit Report: Streams, Lakes and Wetlands, Aqua-Tex Scientific Consulting Ltd. March 17, 2016
 8. Wastewater System Setback Reduction Study, H₂O Environmental Ltd. March 8, 2016
 9. Water Licence
 10. Public Comment – Graham Lake Improvement District, June 11, 2016
 11. Island Health Comments
 12. Addendum to DVP application Jemima Rd Setback Report, June 27, 2016
 13. Letter from applicant responding to Island Health, June 23, 2016
 14. Additional comments from Island Health, June 30, 2016
 15. Public Comment dated June 30 from Esther Muirhead
-



Preserving Island communities, culture and environment

Victoria Office

200 - 1627 Fort Street
 Victoria, BC V8R 1H8
 Telephone: 250.405.5151
 Fax: 250.405.5155
 information@islandstrust.bc.ca
 North Pender, South Pender, Galiano,
 Mayne, Saturna, Executive

Salt Spring Office

1 - 500 Lower Ganges Road
 Salt Spring Island, BC V8K 2N8
 Telephone: 250.537.9144
 Fax: 250.537.9116
 ssiinfo@islandstrust.bc.ca
 Salt Spring

Northern Office

700 North Road
 Gabriola Island, BC V0R 1X3
 Telephone: 250.247.2063
 Fax: 250.247.7514
 northinfo@islandstrust.bc.ca
 Denman, Gabriola, Gambier,
 Hornby, Lasqueti, Thetis

www.islandstrust.bc.ca

Toll Free via Enquiry BC in Vancouver 660-2421. Elsewhere in BC 1.800.663.7867

Development Variance Permit Application Form

Print Form

Fee Paid:

\$ 495.00

Office Use Only

Receipt No.:

3064

File No.:

DE-DVP-2016.1

SECTION 1: DESCRIPTION OF PROPERTY

(AS INDICATED ON STATE OF TITLE CERTIFICATE)

Lot/Parcel 3 Plan 38716 Block - District Lot/Section 13Range - Other Description R-2 ZoneStreet Address or General Location 3131 Jemima RoadJurisdiction and Folio Number 77107188310 (From Property Assessment/Tax Notice)Parcel Identifier (PID) 000-980-820 (From State of Title Certificate)**SECTION 2: OWNER INFORMATION**

(ADD ADDITIONAL PAGE IF MORE THAN TWO OWNERS)

First Owner InformationName Quinn LundbergName 346 Sunset AvenueStreet Address City Venice Region CACity Postal/Zip Code 90291Postal/Zip Code TelephoneTelephone FaxFax E-mail quinnlundberg@mac.com

E-mail

Second Owner InformationName Street AddressStreet Address CityCity Postal/Zip CodePostal/Zip Code TelephoneTelephone FaxFax E-mail

E-mail

SECTION 3: APPLICANT INFORMATION

(IF DIFFERENT FROM OWNER)

Name Citizen Design Build Inc. Street Address 2785 Murray DriveCity Victoria Region BC Postal/Zip Code V9A 2S4Telephone 250 590 3960 Fax 877 782 3838 E-mail serrah@citizenbuilding.ca**Freedom of Information and Protection of Privacy**

Personal information contained on this form is collected under the *Local Government Act* for the purpose of responding to this application, or for purposes directly connected with this application. Information on your application form may be available to the public upon request under freedom of information legislation. Please contact a Deputy Secretary at one of the above noted offices if you have any questions

The processing of your application will be delayed if it is incomplete. Please read the guide before you complete the application form. Keep the guide for your reference during the application process. Contact a staff person for assistance.

Mail or deliver the completed application form, fee, plans and supporting material to the Islands Trust Office. The fee is payable to the Islands Trust. Contact Islands Trust staff for the current fee prior to submitting your application as fees may change annually.

SECTION 4: Provide one full-scale, and three (3) reduced (11 x 17) copies of a detailed site plan and other drawings that must include the following:

- ☒ existing and proposed uses on parcel
- ☒ existing bylaw requirements and proposed variance with accurate dimensions
- ☒ uses of existing and proposed buildings
- ☒ dimensions and/or floor areas of existing and any proposed buildings
- ☒ height of existing and proposed buildings/additions
- ☒ setbacks for all existing and proposed buildings to property lines, natural boundary of sea, watercourses and cliffs
- ☒ setback of existing and proposed septic field to natural boundary of the sea and watercourses (where applicable)
- ☒ parking areas including numbered parking stalls, aisle widths, stall dimensions (where applicable)
- ☒ all wetlands, sewage disposal field(s), septic tanks, wells, drainage areas, ponds and topography
- ☒ landscaping showing existing and proposed landscaping. Also, include an estimate of the cost of landscaping, provided by a Landscape Architect or qualified professional. This estimate will be used to determine the amount of any security required.
- ☒ elevation plan

If the space provided below for each section is not sufficient, please attach additional information using a Microsoft Word, Excel, Text or a separate PDF Document.

SECTION 5: Describe the current uses of the land and buildings on the property.

R-2 zone residential property
There is an existing single family dwelling on site- 2 stories, approx. 1300 sq.ft.
One existing accessory building used for storage - approx. 728 sq.ft.

SECTION 6: Describe the proposed uses of the land and buildings, and show on your site plans the location of any proposed buildings or structures. If required, submit an elevation plan showing side views of the proposal.

Proposed SFD to replace the existing SFD
Proposed Home office
Proposed Workshop to replace the existing shed
Proposed temporary use Secondary dwelling

SECTION 7: Describe the proposed variances to the bylaw requirements that are needed for the proposed development of the property. On your site plan, show the existing bylaw requirement and your proposed variance with accurate dimensions.

Bylaw No. 2.3 General Setback Regulations- Setbacks from Streams, Lakes & Wetlands:
• 60m from Graham Lake boundary to buildings & structures
• 30m for a sewage disposal field or alternate system to a stream, 60m to Graham lake
Requested variance: 40m from Graham Lake to buildings & structures and sewage disposal field
15m from stream to sewage disposal field

SECTION 8: Describe the reasons for the proposed variance and why the current bylaw requirements cannot be met in the proposed development.

A variance is required for residential development on this property because the above mentioned setbacks overlap each other and encompass the cleared area where the existing principle residence and yard are located. There are two areas on this property where siting buildings and services are possible: Within the existing clearing between Graham lake and the stream OR above Graham ridge adjacent to Jemima road. The latter is an entirely undeveloped forested area and it is our intention to keep tree removal and development in this area to an absolute minimum. The existing clearing is an obvious choice for proposed structures, as minimal tree removal and environmental disturbance will be required and it keeps the SFD and accesory buildings in close proximity. However the setbacks laid out in the landuse bylaw leave no room for construction or wastewater systems in this area without acquiring a variance.

SECTION 9: Describe how the property and the surrounding lands may be affected by the proposed variance, show any of the affected features on your site plan, and describe how you propose to mitigate.

An environmental impact assessment of the property did not identify any sensitive ecological features to which our proposal would pose a risk. Graham lake as a community water supply has been carefully considered in our approach to wastewater treatment. The hydrologist's report describes a system designed with our specific site constraints in mind and which offers considerably more robust protection to the lake water quality than the existing system which is a Type 1 system, over 20 yrs old requiring maintenance.

SECTION 10: Describe any consultation you have undertaken with your neighbours and strata corporation (if applicable).

We will be providing neighbours as well as the Graham Lake Improvement District with an overview of our project details and proposal in order to offer adequate time & information for any concerns or comments to be raised.

SECTION 11: APPLICATION COMPLETION CHECKLIST

- ☒ I have completed all sections of this application form
- ☒ I have included detailed site plans and elevation drawings as required in Section 4 of this application form
- ☒ I have included recent State of Title Certificate (not more than 30 days old)
- ☒ I have included copies of all covenants registered against this title
- ☒ All owners listed on the title have signed the application
- ☒ I have included the correct fee (Contact Islands Trust staff for current fees)

IMPORTANT: Your application will not be considered complete unless it contains all of the information above.

A Note about Obtaining State of Title Certificate and Covenants: State of Title Certificate and covenants may be obtained from the Land Title Office or through your local government agent office for a fee.

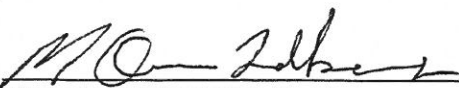
SECTION 12: OWNER'S CONSENT AND AUTHORIZATION

(Signature of all registered owners is required. For additional owners, including Strata Corporations, attach a separate sheet)

In order to assist Islands Trust Planners in the review and evaluation of my application, by signing below, I authorize the Planners assigned to this application to enter onto the land at reasonable times, after making reasonable efforts to arrange to schedule a convenient time for such a visit, to inspect the land. I acknowledge a right, if a convenient time can be scheduled, to accompany the Planner on the site visit.

By signing below, I authorize the Applicant named in Section 3 of this application to represent this application:

First Consent and Authorization



Consent and Authorization Signature

03/16/2016

Date

Second Consent and Authorization



Consent and Authorization Signature

03/16/2016

Date

Contaminated Sites Regulation

Print Form

Please note that pursuant to Section 4(4) of the Contaminated Sites Regulation, B.C.Reg. 375/96, site profile is not required and will not be accepted by the Islands Trust. If you have any questions, please contact the Islands Trust office.

Development Variance Permit Application

3131 Jemima Road, Denman Island

Bylaw No. 2.3 General Setback Regulations- Setbacks from Streams, Lakes & Wetlands:

- 60m from Graham Lake boundary to buildings & structures
- 30m for a sewage disposal field or alternate system to a stream, 60m to Graham lake

Requested variance:

- 40m from Graham Lake to buildings & structures and sewage disposal field
- 15m from stream to sewage disposal field

Proposal Description

This application is proposing a reduction in setbacks for proposed buildings and septic system because the required setbacks laid out in the land use bylaw overlap, leaving no feasible room to develop the property without a variance.

Our application for setback variance takes into consideration a network of unique site characteristics on the property and maintains a long term vision of healthy ecosystems and water quality protection. It is our intention to actually increase the existing level of habitat & water quality protection on the property by taking a thoughtful approach to landscaping and land use.

Siting the proposed structures as shown allows us to leave the forested area above the embankment, which comprises more than half of the property, unaffected by construction. Keeping all accessory buildings in close proximity to the principle residence reduces the owners impact on the surrounding ecosystems, and allows for more enjoyment of the natural features.

Hardscaping will be kept pervious throughout, and constructed bioswales strategically placed along the perimeter of the parking area will help to mitigate stormwater infiltration. The sewage disposal field has been designed to accommodate the restrictions in surface area while also substantially increasing the level of treatment compared to what is currently in place. Native plantings will be chosen to enhance water filtration and existing vegetation.

It is our position that the proposed site layout makes the most of the usable area on the property while having the least negative impact on the environment.

PROPOSED

	DENMAN ISLAND LOCAL TRUST COMMITTEE DEVELOPMENT VARIANCE PERMIT DE-DVP-2016.1 (LUNDBERG)
---	---

TO: 1018128 BC LTD (LUNDBERG)

1. This Development Variance Permit applies to the land described below:

PID: 000-980-820

Lot 3, Section 13, Denman Island, Nanaimo District, Plan 38716

2. Pursuant to Section 498 of the *Local Government Act*, the *Denman Island Land Use Bylaw No. 186* is varied as follows:

a) Part 2 GENERAL REGULATIONS, Section 2.3 General Setback Regulations; Subsection 2.3.2 "Setbacks from Streams, Lakes, and Wetlands" is varied as follows:

i) the setback to Graham Lake is varied from 60 metres to 40 metres to allow a single family dwelling, a home office, a guest house, a drilled water well and a sewerage system;

AND

ii) the setback to a stream is varied from 30 metres to 15 metres to allow a sewerage system;

AND

b) Such reductions apply only to the proposed single family dwelling, the home office, the guest house, drilled well, and sewerage system as shown on Schedules "A1" through "A3," attached to and forming part of this permit.

3. All buildings and structures shall be consistent with Schedules "A1" through "A3" which is attached to and forms part of this permit. This permit is not a building permit and does not remove any obligation on the part of the permittee to comply with all other requirements of Denman Island Local Trust Committee Bylaw No. 186, including use and density, and to obtain other appropriate approvals necessary for completion of the proposed development.

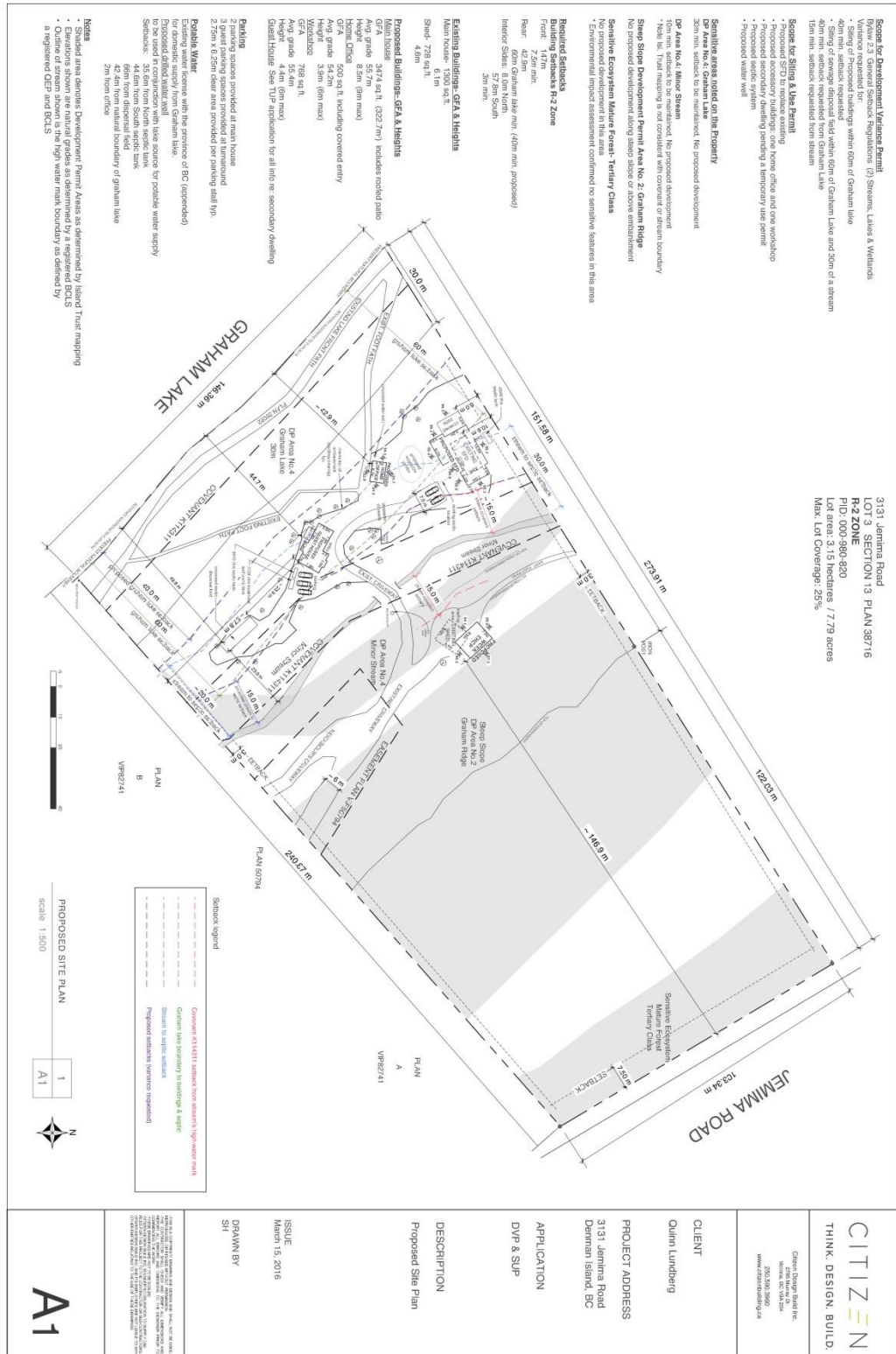
AUTHORIZING RESOLUTION PASSED BY THE DENMAN ISLAND LOCAL TRUST COMMITTEE THIS ____ DAY OF ____.

Deputy Secretary, Islands Trust

Date of Issuance

IF THE DEVELOPMENT DESCRIBED HEREIN IS NOT COMMENCED BY THE ____ DAY OF _____, 2018, THIS PERMIT AUTOMATICALLY LAPSES.

Schedule “A1”



The figure contains three architectural drawings of a residence:

- Top Drawing: Principle Residence- South Elevation**
 - Scale: 1/4" = 1'-0"
 - Label: 1
 - Dimensions: 27'-10" (width), 14'-0" (height)
 - Features: A large central gable with a dormer, multiple windows, and a covered patio on the left.
- Bottom Left Drawing: Home Office- North Elevation**
 - Scale: 1/4" = 1'-0"
 - Label: 2
 - Dimensions: 14'-0" (width), 14'-0" (height)
 - Features: A small, single-story structure with a flat roof and a central window.
- Bottom Right Drawing: Workshop- West Elevation**
 - Scale: 1/4" = 1'-0"
 - Label: 3
 - Dimensions: 14'-0" (width), 14'-0" (height)
 - Features: A small, single-story structure with a flat roof and a central window.

CITIZEN
THINK. DESIGN. BUILD.

Citizen Design Build Inc.
1000 West 10th Avenue
Vancouver, BC V6H 3G9
250.696.2990
www.citizenbuild.ca

CLIENT
Quirin Lundberg

PROJECT ADDRESS
3131 Jemima Road
Dermham Island, BC

APPLICATION
DVP & SUP

DESCRIPTION
Building Elevations

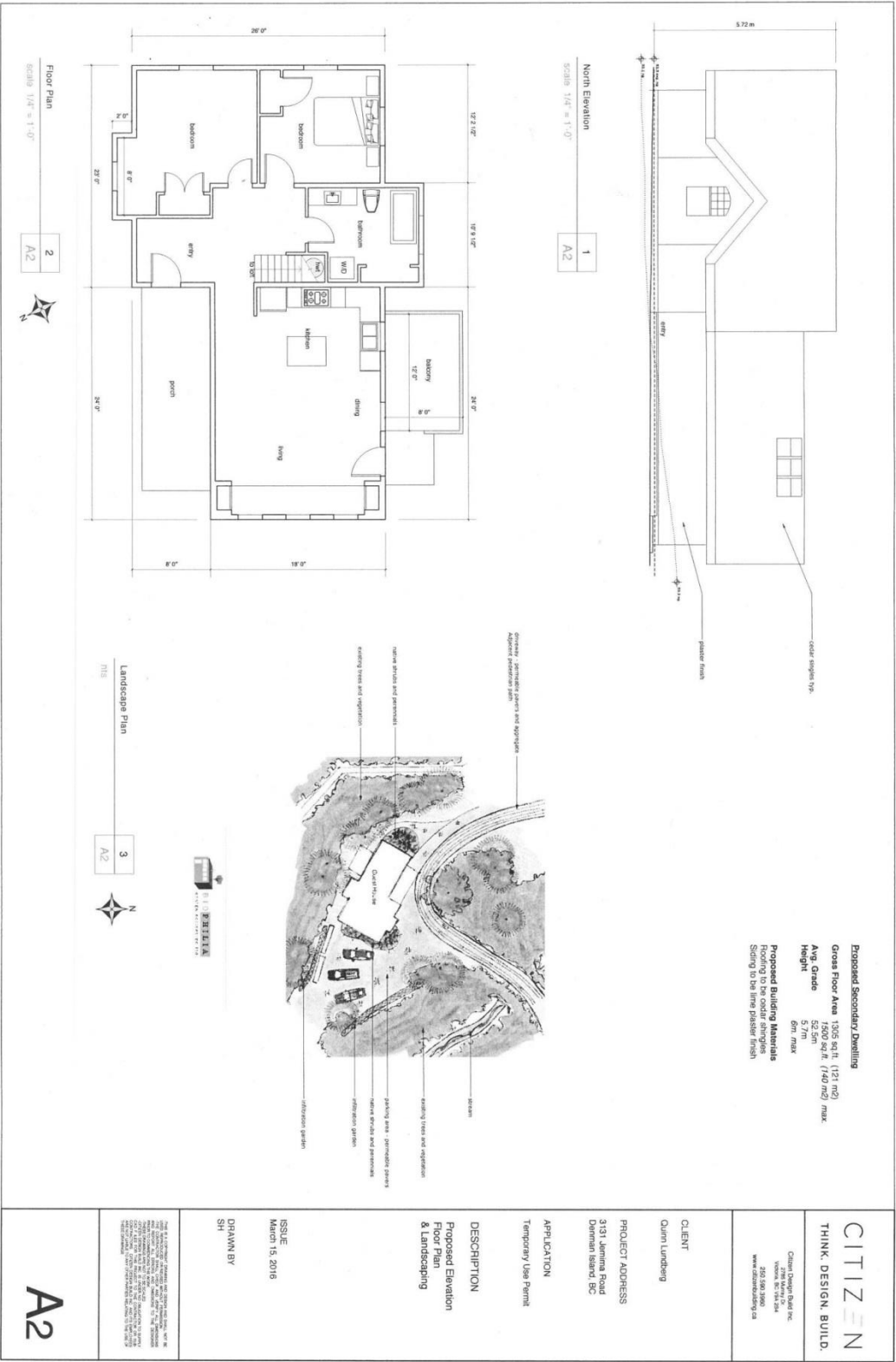
ISSUE
March 15, 2016

DRAWN BY
SH

THIS DRAWING IS THE PROPERTY OF CITIZEN DESIGN BUILD INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF CITIZEN DESIGN BUILD INC. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN THIS DRAWING. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY CONSEQUENCES OF ANY USE OF THIS DRAWING. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY DAMAGE TO ANY PROPERTY OR PERSONS. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY INJURY TO ANY PERSONS. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY DEATH OR INJURY TO ANY PERSONS. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY DAMAGE TO ANY PROPERTY OR PERSONS. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY INJURY TO ANY PERSONS. CITIZEN DESIGN BUILD INC. IS NOT RESPONSIBLE FOR ANY DEATH OR INJURY TO ANY PERSONS.

A2

Schedule "A3"





NOTICE

DENMAN ISLAND LOCAL TRUST COMMITTEE

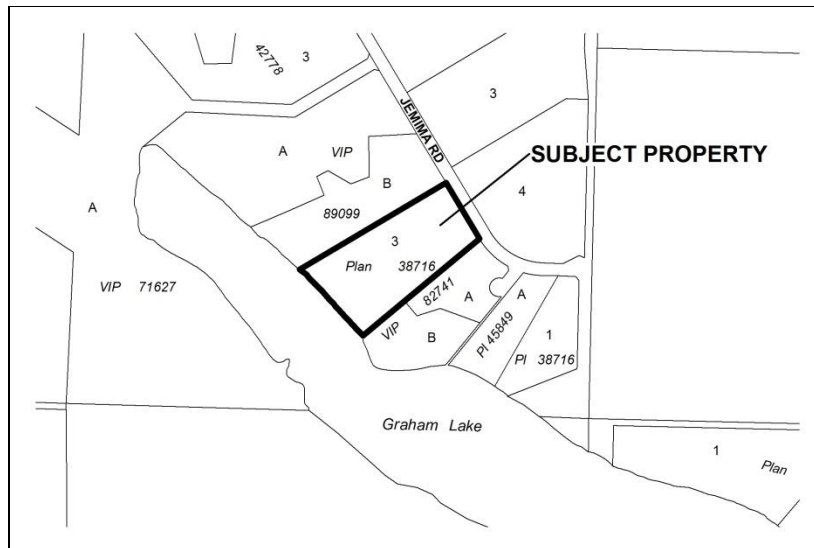
DE-DVP-2016.1

NOTICE is hereby given that the Denman Island Local Trust Committee will be considering a resolution allowing for the issuance of a Development Variance Permit, pursuant to Section 498 of the *Local Government Act*, varying Section 2.3, Subsection 2.3.2 of the *Denman Island Land Use Bylaw No. 186, 2008* at its Regular Business Meeting to be held at 10:30 am on **July 5, 2016** at the Denman Island Seniors Hall, 1111 Northwest Road, Denman Island, BC

In general terms, the purpose of the proposed Permit is 1) to authorize the reduction of the setback to Graham Lake from 60 metres to 40 metres to allow buildings, a well and a sewerage system and 2) to authorize the reduction of the setback to a stream from 30 metres to 15 metres to allow a sewerage system.

The proposed permit is legally described as Lot 3, Section 13, Denman Island, Nanaimo District, Plan 38716 (PID: 000-980-820)

The general location of the subject area is shown on the following sketch:



A copy of the proposed Permit may be inspected at the Islands Trust Northern Office, 700 North Road, Gabriola Island, BC, between the hours of 8:30 am to 4:00 pm, Monday to Friday inclusive, excluding statutory holidays, commencing **June 24, 2016** and continuing up to and including **July 4, 2016**.

Also, attached for your convenience, is a copy of the proposed Permit.

Enquiries or comments should be directed to Marnie Eggen, Planner 2 at (250) 247-2210, for Toll Free Access, request a transfer via Enquiry BC: In Vancouver 604-660-2421 and elsewhere in BC 1-800-663-7867; or by fax (250) 247-7514; or by email to: meggen@islandstrust.bc.ca, before **4:00 p.m., July 4, 2016**. The Denman Island Local Trust Committee may consider a resolution allowing for the issuance of the permit during the regular business meeting starting at **10:30 a.m., July 5, 2016**, at the Denman Island Seniors Hall, located at 1111 Northwest Road, Denman Island, BC

All applications are available for review by the public. Written comments made in response to this notice will also be available for public review.

Becky McErlean
Deputy Secretary



Preserving Island communities, culture and environment

Attachment 4

Victoria Office

200 - 1627 Fort Street
Victoria, BC V8R 1H8
Telephone: 250.405.5151
Fax: 250.405.5155
information@islandstrust.bc.ca
North Pender, South Pender, Galiano,
Mayne, Saturna, Execlutiv

Salt Spring Office

1 - 500 Lower Ganges Road
Salt Spring Island, BC V8K 2N8
Telephone: 250.537.9144
Fax: 250.537.9116
ssinfo@islandstrust.bc.ca
Salt Spring

Northern Office

700 North Road
Gabriola Island, BC V0R 1X3
Telephone: 250.247.2063
Fax: 250.247.7514
northinfo@islandstrust.bc.ca
Denman, Gabriola, Gambier,
Hornby, Lasqueti, Thetis

www.islandstrust.bc.ca

Toll Free via Enquiry BC in Vancouver 660-2421. Elsewhere in BC 1.800.663.7867

Temporary Use Permit Application Form

Print Form

Fee Paid:

\$ 440.00

Office Use Only

Receipt No.:

3064

File No.:

DE-TUP-2016.1

☒ Initial Permit (maximum three years) ☐ Amendment (to an existing permit) ☐ Renewal (maximum three years and can only be renewed once)

SECTION 1: DESCRIPTION OF PROPERTY

(AS INDICATED ON STATE OF TITLE CERTIFICATE)

Lot/Parcel 3 Plan 38716 Block - District Lot/Section 13

Range Other Description R-2 zone

Street Address or General Location 3131 Jemima Road

Jurisdiction and Folio Number 77107188310 (From Property Assessment/Tax Notice)

Parcel Identifier (PID) 000-980-820 (From State of Title Certificate)

SECTION 2: OWNER INFORMATION

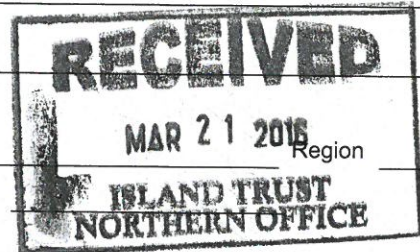
(ADD ADDITIONAL PAGE IF MORE THAN TWO OWNERS)

First Owner Information

Quinn Lundberg
Name
346 Sunset Avenue
Street Address
City Venice Region CA
Postal/Zip Code 90291
Telephone
Fax
E-mail quinnlundberg@mac.com

Second Owner Information

Name
Street Address
City
Postal/Zip Code
Telephone
Fax
E-mail



SECTION 3: APPLICANT INFORMATION

(IF DIFFERENT FROM OWNER)

Name Citizen Design Build Inc. Street Address 2785 Murray Drive
City Victoria Region BC Postal/Zip Code V9A 2S4
Telephone 250 590 3960 Fax 877.782.3838 E-mail serrah@citizenbuilding.ca

Freedom of Information and Protection of Privacy

Personal information contained on this form is collected under the Local Government Act for the purpose of responding to this application, or for purposes directly connected with this application. Information on your application form may be available to the public upon request under freedom of information legislation. Please contact a Deputy Secretary at one of the above noted offices if you have any questions

The processing of your application will be delayed if it is incomplete. Please read the guide before you complete the application form. Keep the guide for your reference during the application process. Contact a staff person for assistance.

Mail or deliver the completed application form, fee, plans and supporting material to the Islands Trust Office. The fee is payable to the Islands Trust. Contact Islands Trust staff for the current fee prior to submitting your application as fees may change annually.

SECTION 4: Provide one full-scale, and three (3) reduced (11 x 17) copies of a detailed site plan and other drawings that must include the following:

- ☒ location of all wetlands, sewage disposal field(s), septic tanks, wells, drainage areas, ponds and topography
- ☒ existing and proposed uses on parcel
- ☒ uses of existing and proposed buildings
- ☒ dimensions and/or floor areas of existing and any proposed buildings
- ☒ height of existing and proposed buildings/additions
- ☒ setback of all existing and proposed buildings, septic tanks and fields and wells to property lines, natural boundary of sea and cliffs
- ☒ parking areas including numbered parking stalls, aisle widths, stall dimensions (where applicable)
- ☒ existing uses and locations of buildings on immediately adjacent lots
- ☒ landscaping plan showing existing and proposed landscaping. Also, include an estimate of the cost of landscaping, provided by a Landscape Architect or qualified professional. This estimate will be used to determine the amount of any security required for the development. (Alternatively, the above can be included in the site plan)
- ☒ elevation plan
- ☒ proposed building materials to be used
- ☒ existing and proposed signs including dimensions and proposed building materials
- ☒ proposed alterations to building elevations

If the space provided below for each section is not sufficient, please attach additional information using a Microsoft Word, Excel, Text or a separate PDF Document.

SECTION 5: Describe the current uses of the land and buildings on the property.

R-2 zone residential property
There is an existing single family dwelling on site- 2 stories, approx. 1300 sq.ft.
One existing accessory building used for storage - approx. 728 sq.ft.

SECTION 6: Describe the proposed temporary uses of the land and buildings.

Temporary use application is for a secondary dwelling on the property.
The intended use of the secondary dwelling is for potential accommodation for the owner's relatives currently residing on Denman Island. The main bedroom and bath has been designed with accessibility in mind, so that adaptations can be made easily to suit special needs housing. The dwelling can also provide an affordable rental opportunity for a property caretaker.

SECTION 7: Describe the time period required for the temporary use.

We anticipate a review of the secondary dwelling in three years, at which time the benefits as well as any comments from neighbours regarding its use can be assessed.

SECTION 8: If the property is subject of a lease, provide details of the lease.

n/a

SECTION 9: Describe the reasons for the proposed temporary use.

The intended uses of the secondary dwelling listed above allow us to keep the gross floor area of the principle dwelling lower by reducing the number of bedrooms required and providing a separate accommodation option for relatives or others.

SECTION 10: Describe the steps that will be taken to restore the land or buildings after completion of the temporary use. Additional information may be requested during the review of this application. Security may be requested as a guarantee of performance of the terms of the permit.

The land where we are proposing to situate the guest house is currently a cleared driveway turnaround. Construction will create minimal enviornmental disturbance and the landscaping can easily be returned to it's current condition.

SECTION 11: APPLICATION COMPLETION CHECKLIST

- ☒ I have completed all sections of this application form
- ☒ I have included detailed site plans and elevation drawings as required in Section 4 of this application form
- ☒ I have included recent State of Title Certificate (not more than 30 days old)
- ☒ I have included copies of all covenants registered against this title
- ☒ All owners listed on the title have signed the application
- ☒ I have included the correct fee (Contact Islands Trust staff for current fees)

IMPORTANT: Your application will not be considered complete unless it contains all of the information above.

A Note about Obtaining State of Title Certificate and Covenants: State of Title Certificate and covenants may be obtained from the Land Title Office or through your local government agent office for a fee.

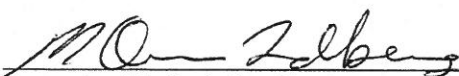
SECTION 12: OWNER'S CONSENT AND AUTHORIZATION

(Signature of all registered owners is required. For additional owners, including Strata Corporations, attach a separate sheet)

In order to assist Islands Trust Planners in the review and evaluation of my application, by signing below, I authorize the Planners assigned to this application to enter onto the land at reasonable times, after making reasonable efforts to arrange to schedule a convenient time for such a visit, to inspect the land. I acknowledge a right, if a convenient time can be scheduled, to accompany the Planner on the site visit.

By signing below, I authorize the Applicant named in Section 3 of this application to represent this application:

First Consent and Authorization

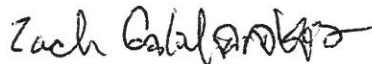


Consent and Authorization Signature

03/16/2016

Date

Second Consent and Authorization



Consent and Authorization Signature

03/16/2016

Date

SECTION 13: SUPPLEMENTAL INFORMATION REQUIREMENT (IF APPLICABLE)

If you are applying for a Temporary Use Permit for either "Vacation Rentals" or "Bulk Water Sales", please complete a Temporary Commercial and Industrial Use Supplemental Application Form, which must be submitted along with the Application Form and which forms part of this application.

[Print Form](#)

Contaminated Sites Regulation

Please note that pursuant to Section 4(4) of the Contaminated Sites Regulation, B.C.Reg. 375/96, site profile is not required and will not be accepted by the Islands Trust. If you have any questions, please contact the Islands Trust office.

Attachment 5
PROPOSED

 Islands Trust	DENMAN ISLAND LOCAL TRUST COMMITTEE TEMPORARY USE PERMIT DE-TUP-2016.1 (LUNDBERG)
--	--

To: **1018128 BC LTD (LUNDBERG)**

1. This Permit applies to the land described below:

PID: 000-980-820

Lot 3, Section 13, Denman Island, Nanaimo District, Plan 38716

2. Pursuant to Section 493 of the *Local Government Act*, this Permit is issued for the purpose of permitting a secondary dwelling unit on the above described land, and is subject to the following conditions:

- a) maximum floor area of the secondary dwelling unit shall not be more than 122 square metres;
- b) the secondary dwelling unit shall not be located more than 42 metres from the principal residence;
- c) the owner must provide accommodation for a minimum of one vehicle for the secondary dwelling unit;
- d) the secondary dwelling unit shall be connected to an approved sewerage system in accordance with the report "Wastewater System Setback Reduction Study," dated March 8, 2016, prepared by H₂O Environmental Ltd. as shown on Schedule "A3" attached to and forming part of this permit;
- e) potable water shall be supplied in accordance with the "Temporary Use Permit Proposed Site Layout," and "Potable Water Supply Plan," prepared by Citizen Design Build Inc. as shown on Schedules "A1," "A4" & "A5" attached to and forming part of this permit;
- f) the construction of the secondary dwelling unit and future use of the land surrounding the secondary dwelling unit shall be in accordance with report "Development Permit Report: Streams, Lakes and Wetlands," dated March 17, 2016, prepared by Aqua-Tex Scientific Consulting Ltd. as shown on Schedule "A6," attached to and forming part of this permit;
- g) the secondary dwelling unit is not permitted to be used for short term vacation rental or for the accommodation of paying guests in accordance with Regulation 2.1.2 of the Denman Island Land Use Bylaw;
- h) the holder of the Permit will be held accountable for any violation of the conditions of this Permit; AND
- i) conditions a) through h) apply to the proposed guest house and sewerage system as shown on Schedules "A1" and "A2" attached to and forming part of this permit.

3. This Permit expires three years from date of issuance.

4. This is not a Siting and Use Permit, nor does it relieve the Permittee from the need to secure all other approvals necessary for the proposed development.

**AUTHORIZING RESOLUTION PASSED BY THE DENMAN ISLAND LOCAL TRUST COMMITTEE
THIS ____ DAY OF ____.**

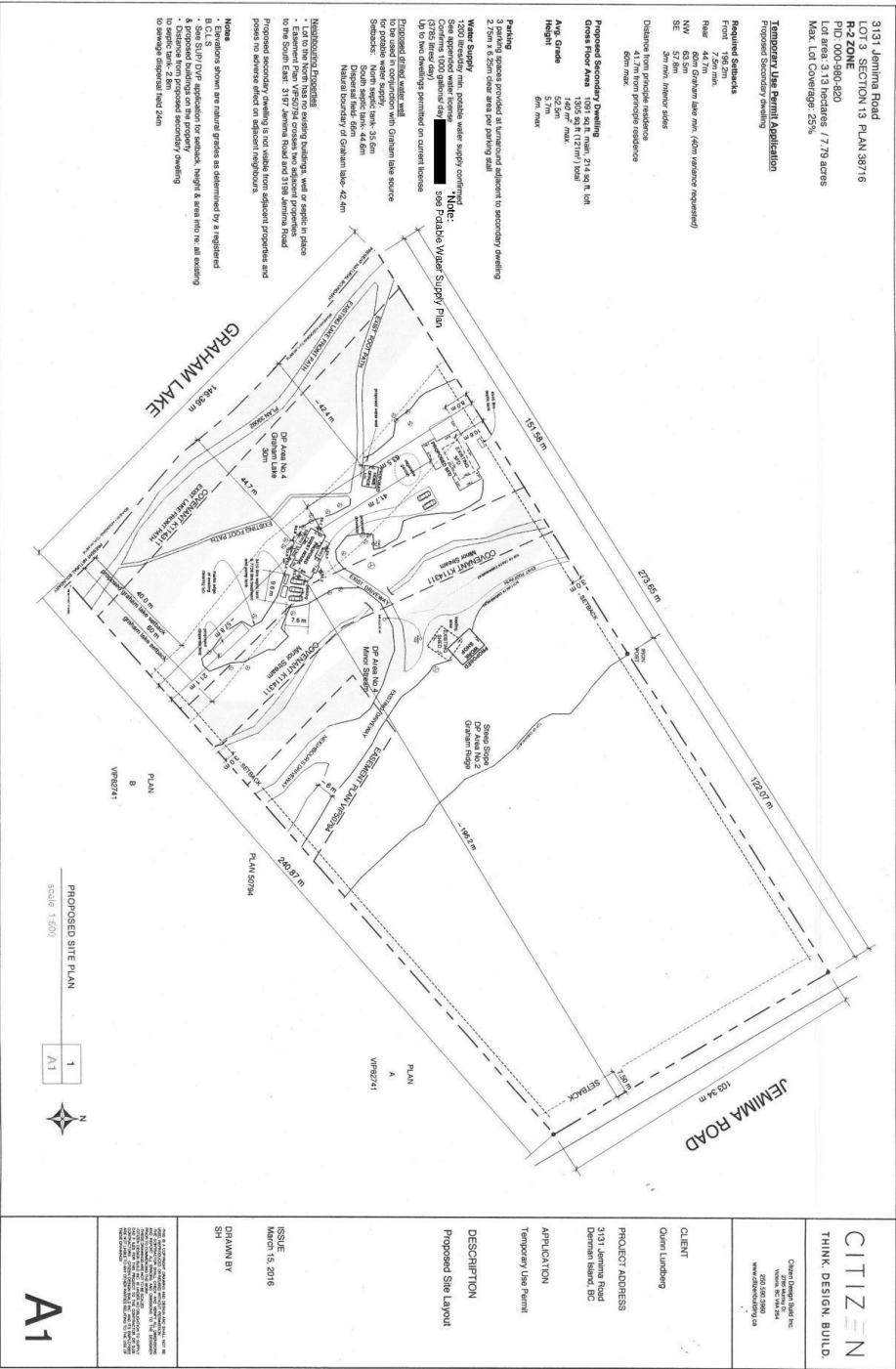
Deputy Secretary, Islands Trust

Date Issued

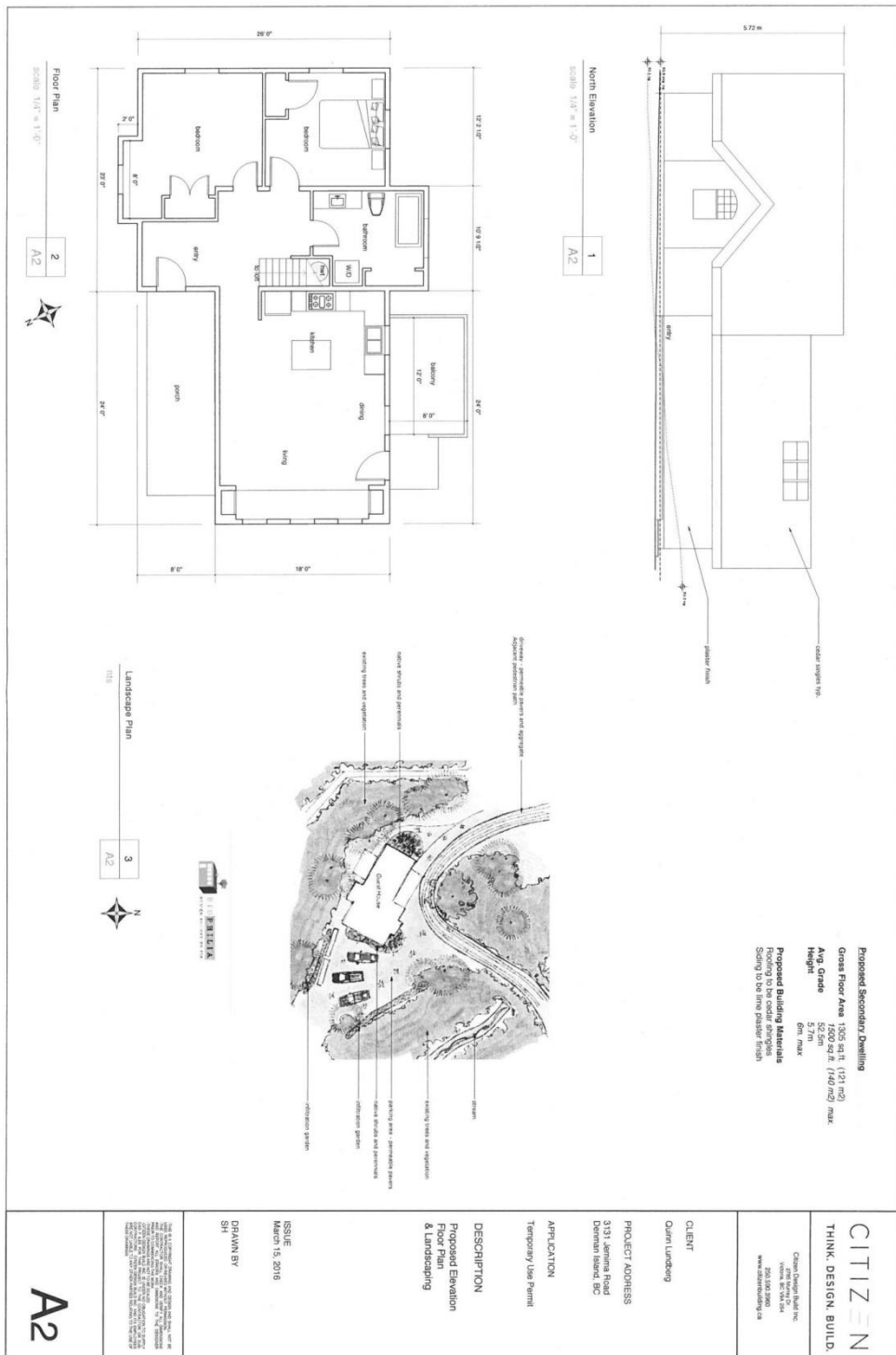
DENMAN ISLAND LOCAL TRUST COMMITTEE

DE-TUP-2016.1

Schedule "A1"



Schedule "A2"



Schedule "A3"



3060 Lake Road, Denman Island, BC V0R 1T0
Tel : (250) 335-1864 Fax: (250) 335-1846
Email: h2oenv@telus.net

March 8, 2016

H₂O File: 15-81

Citizen Design
2785 Murray Drive
Victoria, BC V9A 2S4

Re: Wastewater System Setback Reduction Study
3131 Jemima Road, Denman Island

Introduction

H₂O Environmental Ltd. (H₂O) was retained by you, on behalf of the owners, to complete a limited hydrogeologic investigation of the above referenced site and to design the wastewater system for the new building configuration. H₂O understands that you are increasing the size of the existing house to four bedrooms and constructing a two-bedroom guest cottage.

The existing house and the proposed guest cottage are in an area of the property that is located between an ephemeral stream and Graham Lake. The Islands Trust setback to a wastewater system from Graham Lake is set at 60 metres (m) and from a stream is set at 30 m¹. The property owners needed an investigation as to whether or not a new wastewater system can be safely installed at your site.

A wastewater system is defined in the Sewerage System Regulation² (SSR) as comprising tanks and the associated dispersal field. The area of the site available for a wastewater system is constrained by the topography. There is no feasible location on the site for the wastewater dispersal system that is not less than 60 metres from the lake. The setback reduction will be proposed for 40 metres to Graham Lake versus the 60 metres required by Bylaw 186. The proposed reduction of the setback to the ephemeral stream will be approximately 10 metres.

H₂O has investigated the potential for contamination to the lake and the ephemeral stream which may result from use of the new wastewater system. Figure 1 presents a site plan of the area under study with proposed setbacks. The purpose of this letter is to report the results of the field work and the limited hydrogeologic investigation.

Scope of Work

H₂O's completed the following scope of work for this investigation:

- desk study of area geology and hydrogeology to investigate local subsurface conditions;
- an assessment of the local drainage patterns;

¹ Islands Trust Denman Island Bylaw 186, 2008, Sec.2.3.2

² Public Health Act Sewerage System Regulation, BC Reg. 326/2004 with amendments up to BC Reg. 209/2010



- an investigation of the hydraulic conductivity of the onsite soils using data from onsite permeability tests and soil characterization;
- evaluation of the drainage, geologic and permeability data;
- preparation of this report detailing site work with conclusions and recommendations.

Results of Investigation

Desk Study

The soils for the site are classified as Royston soils.³ They have developed in deep gravelly morainal (glacial) deposits. They vary from gravelly loam to to gravelly clay loam and are usually found over glacial till.

The bedrock geology in the area has been mapped⁴ as the DeCourcey Formation of the Nanaimo Group. These rocks are late Cretaceous age (90 to 60 million years old) and consist of coarsely bedded sandstone with interbedded conglomerate.

The BC Water Resources Atlas lists registered wells in BC⁵. No wells were found within a 100 metre radius of the proposed wastewater system.

Aquifer #0740 was identified for the area of the site from the BC Water Resources Atlas.⁶ This is a bedrock aquifer which is approximately 47.7 kilometres² in size and is rated as having a moderate demand, low productivity and high vulnerability. Only local quality concerns and no quantity concerns were noted on the website for this aquifer.

Field Investigation

The existing house, the proposed guest cottage and the proposed wastewater system are located on a portion of the site that artificially grades moderately to the southeast. The larger scale topography in the area of study grades steeply to the southwest, towards Graham Lake. Groundwater flow direction is inferred to be the same, following the topography. Natural overland drainage will also be towards the lake.

The stream is located to the northeast, and is up-gradient of, the proposed location of the wastewater system dispersal field. The stream is highly incised into the topography, with steep sides and narrow width.

Most of the properties around the lake have water licenses to draw water for domestic use from Graham Lake. No wells were identified within 30 metres of the wastewater system.

Two testpits were advanced in the area of the proposed wastewater field. The general soil profile onsite was a thin layer of sod or forest debris, underlain by brown to black gravelly loam to approximately 35 centimetres (cm). Finely fractured sandstone bedrock with some silt was then observed to approximately 55 cm, which was underlain by competent

³ Jungen, J. R. , Ministry of Environment, *Soils of Southern Vancouver Island*, MOE Technical Report 17, 1985

⁴ Ministry of Environment BC Water Resources Atlas www.maps.gov.bc.ca/ess/sv/wrbc

⁵ Ministry of Environment BC lmap www.maps.gov.bc.ca/ess/sv/lmapbc

⁶ Website: srmapps.gov.bc.ca/apps/wrbc/

sandstone bedrock. No groundwater was observed in the testpits. The winter water table elevation was assumed to be approximately 55 cm below grade, on top of the sandstone bedrock.

To measure the *in-situ* permeability of the soils, four permeameter tests were conducted. Auger holes were advanced within the proposed wastewater dispersal field and between the wastewater field and Graham Lake to a maximum depth of 40 cm. Auger holes were advanced to within the inferred depth of infiltration from the proposed wastewater dispersal system.

The permeameter test consists of a calibrated tube filled with water which is inserted into an auger hole allowing the water to escape at a flow rate determined by the ability of the soil to transmit it away from the tube. The water flow out of the tube is measured and a field saturated hydraulic conductivity (K_{fs}) of the soil is calculated from the results. Hydraulic conductivity is the volume of water the soil will transmit over a given period of time and is generally considered to be 2x the K_{fs} .

The fastest calculated field saturated hydraulic conductivity of the soil was on the order of 0.41 metres per day, with a hydraulic conductivity of approximately 0.8 m/day.

Based on the estimated soil hydraulic conductivity of 0.8 m/day, an assumed hydraulic gradient of 0.33 (from measured onsite slope below the dispersal area), and a soil porosity of 25%, the effluent velocity in the soils was calculated using the equation $V = Ki/n$, where K is the hydraulic conductivity, i is the hydraulic gradient and n is estimated porosity of the sandy soils.

The velocity of the effluent in the soils is calculated to be approximately 1.1 metres/day.

Wastewater Systems

A Type 1 wastewater system is only septic tank treated effluent with total suspended solids (TSS) and five-day biochemical demand (BOD_5) on the order of 150-300 parts per million (ppm) and 150-250 ppm, respectively. BOD_5 is a measure of the oxygen use of the microbes within the effluent rated over a period of 5 days. Typically, fecal coliform concentrations from a septic tank range from 10^3 to 10^4 colony forming units (CFU) per 100 millilitres.

Type 2 treatment systems reduce the effluent TSS and BOD_5 to less than 45 ppm. A Type 2 10/10 system reduces the TSS and BOD_5 to 10 ppm.

A Type 3 system requires reduction of the fecal coliforms to less than 400 CFU per 100 milliliters while maintaining the 10 ppm standard for TSS and BOD_5 . For residential systems, this is generally done with tertiary treatment, i.e. – a UV light.

A Type 2 10/10 treatment system has been specified on this site due to the limited depth of permeable soil and the space constraints. Additional engineered sand under the sand mound will create Type 3 effluent on infiltration to native soils.

Preliminary Wastewater System Design

H₂O has designed a passive Type 3 wastewater system for the site. It will consist of a septic tank at the main house and a septic tank at the guest cottage, both of which will flow into a 7,728 litre 3 chamber concrete tank. A Bionest treatment plant will be located in the first two chambers. The Bionest is an aerated suspended media type system where aerobic bacteria cling to suspended media and treat the effluent to a maximum of 10 ppm TSS and 10 ppm BOD₅. The treated effluent will then gravity feed to the third chamber used as a pump chamber where it will be time dosed to the dispersal field. Time dosing eliminates the peaks of water use normally found in demand systems and spreads the dosing of the daily volume of effluent over a period of 24 hours to avoid soil saturation and "short-circuiting" of the effluent. The Bionest system reduces nitrogen by approximately 95% with recirculation of treated effluent back to the septic chamber.

The wastewater dispersal field will be located at the top of the slope to Graham Lake. Additional depth of engineered sand under the dispersal field will lower the fecal coliform to less than 400 CFU⁷ upon entering the native soils.

Pathogen removal has been calculated for the soils in the area between the dispersal field and Graham Lake. These loams will remove 99.99% of the pathogens remaining in the effluent with approximately 1.6 metres of the dispersal field.

The generally accepted concentration of phosphorus in a freshwater system that may result in eutrophication is approximately 0.02 mg/l in the lake water. Typical phosphorus (P) concentrations in raw sewage have been shown to be approximately 7 mg/L⁸. Approximately 20% to 30% removal of P is expected as solids settle in the first tank. This would reduce the P in the tank effluent to about 5 mg/L. Phosphorus removal in unsaturated soils may be up to 99% due to adsorption to soil particle surfaces directly under the infiltration field⁹. The end result of the detention, settling and soil process would result in a P concentration of less than 0.05 mg/L P within 1 metre down-gradient of the infiltration field. As the effluent flows through the remaining 50 metres of soil between the infiltration point and the lake, additional adsorption and plant uptake will occur to reduce the P to levels below 0.02 mg/L.

Discussion

The proposed wastewater system will treat effluent to a much better quality than the existing system. The existing system is 23 years old and is not operating according to design, as reported by an inspection of the system completed in 2014¹⁰.

There is no feasible location on the site in which the setbacks can be maintained from the

⁷ Standridge, Oldstadt, Sonzogni - *Passage of Microorganisms in Septic Tank Effluents Through Mound Sand in a Controlled Laboratory Environment*

⁸ Crites and Tchobanoglous, 1998, *Small and Decentralized Wastewater Management Systems*, Table 4-14

⁹ Document SL349, Soil and Water Science Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. July 2011. M. Lusk, G. Toor and T. Obreza - *Sewage Treatment and Disposal Systems: Phosphorus*

¹⁰ DF Holdings Waste Water Management, *Septic Inspection Report*, October 8, 20145

stream and Graham Lake. As previously noted, the stream is up-gradient of the location of the wastewater disposal field. Pathogen and phosphorus calculations indicate that, even if the effluent were to flow into the area of the stream, those nutrients would be significantly reduced before entering the stream. This makes it very unlikely that the treated effluent will have a negative effect on the stream.

Similarly, as shown above, the reduction of nutrients and pathogens in the effluent moving towards the lake would be significant. The groundwater velocity has been calculated to be approximately 1.1 metre per day. This would indicate that the effluent would be resident in the soils for approximately 36 days before reaching Graham Lake. The generally accepted time for complete polishing of Type 1 effluent in native soils is 14 days.

The phosphorus levels with 2 metres of the wastewater disposal field will be less than 0.05 mg/L, in a properly functioning system. The vegetation downgradient between the dispersal field and the lake should not be disturbed, as this would reduce some of the phosphorus uptake by plants on the slope.

Based on the upgradient location of the stream, the site topography, the inferred effluent flow direction and the proposed treated effluent characteristics, H₂O believes that reducing the setback from the wastewater system from 60 to 40 metres to Graham Lake and from 30 to 15 metres from the stream will not likely cause an environmental or health hazard.

Conclusions

The proposed distances of the new wastewater system to the onsite stream and Graham Lake are less than the setbacks set out in the Sewerage System Standard Practice Manual and Denman Island Bylaw 186. Due to the site topographic constraints, there is no feasible location for the dispersal system on the site where all published setbacks can be maintained.

Based on the following:

- the treatment of effluent to Type 2 10/10 standards with additional depth of sand for Type 3 effluent at the infiltration point;
- up-gradient location of the stream from the wastewater dispersal field and effluent travel direction away from the stream;
- long soil residence time due to the distance to Graham Lake and the effluent velocity in the soil,

H₂O believes that reducing the setback from the wastewater dispersal field to the stream from 30 to 15 metres and the setback to Graham Lake from 60 metres to 40 metres will not likely cause an environmental hazard to the lake or health hazard to any of the lake water users.

The area between the wastewater dispersal field and the lake should remain undisturbed for optimal nitrogen and phosphorus reduction.

Closure

This report has been prepared by H₂O Environmental Ltd. for the property owners, Citizen Design, Islands Trust and Island Health and is intended to provide an assessment of the soils and hydrogeologic conditions in the area of 3131 Jemima Road on Denman Island.

No hydrogeological investigation can wholly eliminate uncertainty regarding the potential for unrecognized conditions in connection with an aquifer or subsurface materials. Performance of this assessment was intended to reduce, but not eliminate, uncertainty regarding the potential impact on the wells from the proposed wastewater system given the limits of the investigation and the reasonable limits of time and cost. No warranty expressed or implied is made.

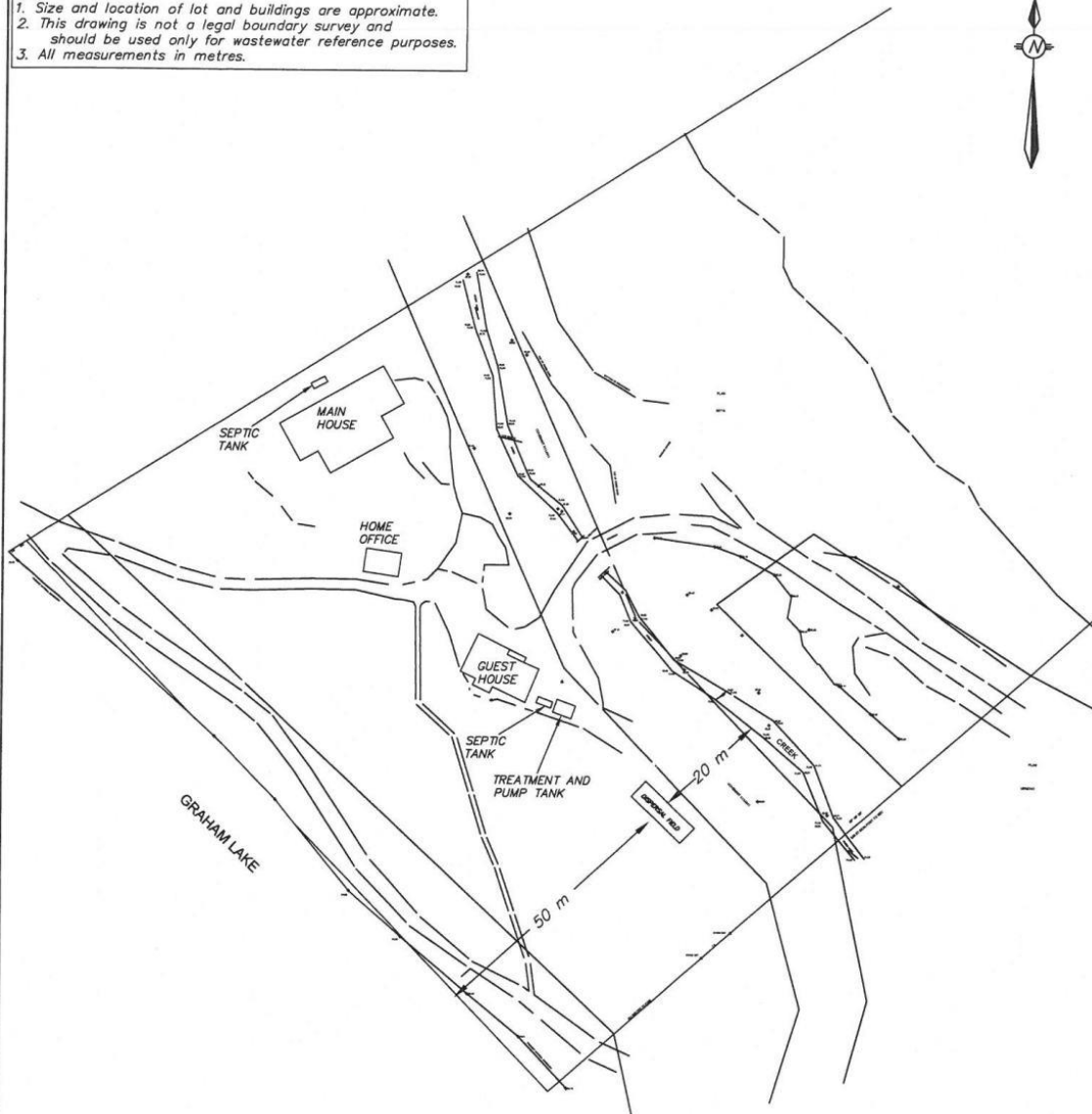
H₂O appreciates the opportunity to provide our services to you. Please do not hesitate to call if you have any questions or comments concerning this report. Should you require additional services in the future, please contact the undersigned.

Sincerely,
H₂O Environmental Ltd.

Per:  
Steven M. Carballeira, P. Geo.

Attachments:
Figure 1: Site Plan

- NOTES:
1. Size and location of lot and buildings are approximate.
 2. This drawing is not a legal boundary survey and should be used only for wastewater reference purposes.
 3. All measurements in metres.



BASE DRAWING COURTESY OF PETER MASON SURVEYING

	TITLE:	SITE PLAN	DATE:	MARCH 10, 2016	FIGURE 1
	PROJECT:	WASTEWATER SYSTEM SETBACK REDUCTION 3131 JEMIMA ROAD, DENMAN ISLAND	DRAWN BY:	SMC	
	CLIENT:	CITIZEN DESIGN	CHECKED BY:	SMC	
			SCALE:	AS SHOWN	
			PROJECT NO:	15-81	

H2O ENVIRONMENTAL LTD. 3060 LAKE ROAD, DENMAN ISLAND, BC V0R 1T0 250-335-1864

Schedule "A4"



Temporary Use Permit Application

3131 Jemima Road, Denman Island

Proposal Description

The temporary use application is for the construction of a secondary dwelling on the above R-2 zoned property. Planning requirements, including distance from the primary residence, off road parking stalls available and adequate potable water supply have all been met. The proposed sewage disposal field located down slope from the secondary dwelling has been sized to accommodate both dwellings.

The intended use of the secondary dwelling is for potential accommodation for the owner's relatives currently residing on Denman Island. The main bedroom and bath has been designed with accessibility in mind, so that adaptations can be made easily to suit special needs housing. The guest house can also provide an affordable rental option for a property caretaker. With these housing objectives in mind we believe our proposal is in keeping with the intentions of the official community plan as well as local bylaws.

Potable Water Supply Plan

Existing water license (appended) confirms 1000 gallons/day (3785 litres/day) permitted draw from Graham lake for domestic use in up to two dwelling units on the property.

Required minimum is 1200 litres /day for each permitted residential dwelling unit

Given area constraints and that the existing supply of potable water exceeds requirements for a secondary dwelling, there is no proposed rain water cistern for the guest house at this time.

THINK. DESIGN. BUILD.

2785 Murray Drive
Victoria BC V9A 2S4

office - 250 590 3960
facsimile - 877 782 3838

direct - 250 213 1513
CITIZENBUILDING.CA

Schedule "A5"

WATER MANAGEMENT
BRANCH

MINISTRY OF
ENVIRONMENT
AND PARKS

THE PROVINCE OF BRITISH COLUMBIA—WATER ACT CONDITIONAL WATER LICENCE

Dixon Lake Properties c/o Isaac Kramer, R.R. #1, Jemina Road,
Denman Island, B.C., V0R 1T0,

are hereby authorized to divert and use water as follows:

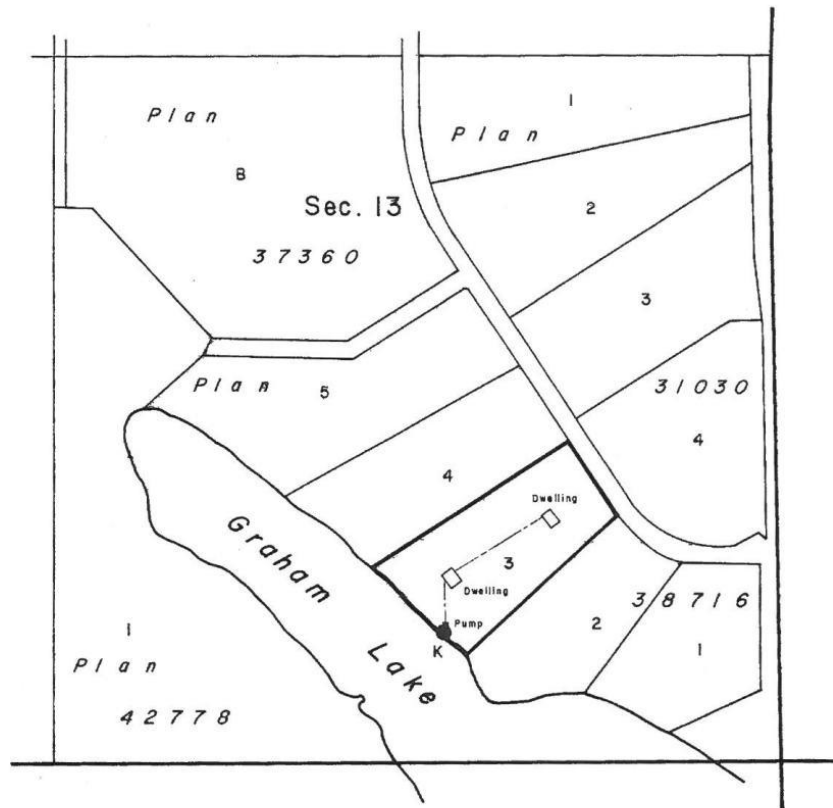
- (a) The source of the water-supply is Graham Lake.
- (b) The point of diversion is located as shown on the attached plan.
- (c) The date from which this licence shall have precedence is 25th April, 1986.
- (d) The purpose for which the water is to be used is domestic.
- (e) The maximum quantity of water which may be diverted is 1,000 gallons a day.
- (f) The period of the year during which the water may be used is the whole year.
- (g) The land upon which the water is to be used and to which this licence is appurtenant is Lot 3 of Section 13, Denman Island, Nanaimo District, Plan 38716.
- (h) The works authorized to be constructed are an intake, pump and pipe, which shall be located approximately as shown on the attached plan.
- (i) The construction of the said works shall be completed and the water beneficially used on or before the 31st day of December, 1990.
- (j) This licence authorizes the use of water for domestic purpose in two dwellings located approximately as shown on the attached plan.


B. Hollingshead
Regional Water Manager

File No. 1000585 Date issued: October 30, 1987. Conditional Licence: 65722



Province of British Columbia



DENMAN ISLAND
Sec. 10

WATER DISTRICT : NANAIMO
PRECINCT : COURTENAY
LAND DISTRICT : NANAIMO

LEGEND

Scale : 1:5000
Point of Diversion : ●
Map Number : WR 92-F-057-1-1
Pipe : ———

Signature *[Signature]*
Date October 30, 1987

C.L. 65722
File 1000585

The boundaries of the land to which this licence
is appurtenant are shown thus: ———

**3131 Jemima Road
Denman Island**

***Development Permit Report: Streams,
Lakes and Wetlands***



Prepared for: Citizen Design Build Inc.

March 17, 2016

Prepared By:

Tracy Motyer, B.Sc., R.B. Tech.

Patrick Lucey, M.Sc., R.P. Bio, C.Biol, MRSB

Table of Contents

1. Project Overview.....	3
Description of Proposed Development	3
2. Riparian: DPA #4 Streams, Lakes & Wetlands.....	5
Fisheries Resources and Geographical Context	5
Observations of Stream Channels and Vegetation.....	8
Graham Lake.....	8
Cicero Slough Creek	11
Site Plan	16
3. Recommendations	17
Measures - Protection of the Riparian Retention Area and Encroachment	17
Measures - Danger Trees in the SPEA	17
Measures - Windthrow	21
Measures - Septic	22
Measures - Slope Stability	22
Measures - Sediment and Erosion Control During Construction/Pollution Prevention Plan	23
Measures - Stormwater Management	24
Measures - Environmental Monitoring During Construction	25
References	27
4. Appendix A: RAR Assessment Forms	28
Results of Riparian Assessment (SPEA width).....	29
Cicero Slough Creek	29
Graham Lake	31
Measures to Protect and Maintain the SPEA	33
Professional Opinion	34

1. Project Overview

This report details the results of an ecological assessment of the subject property at 3131 Jemima Road, located on Denman Island (Figure 2). The purpose of the ecological assessment was to establish a baseline of site conditions and review proposed redevelopment plans for the property with particular attention to two Development Permit Areas (DPA): #2 Steep Slopes and #4 Streams, Lakes and Wetlands. This report addresses riparian ecosystems and Stream, Lakes and Wetlands DPA.

Description of Proposed Development

Redevelopment plans for the site include: reconstruction of the existing single-family dwelling with an expanded footprint, construction of a new guest house, construction of a new office outbuilding, removal of the existing shed and replacement with a new workshop, and installation of a new septic facility (see Site Plan).

This development permit area assessment and Riparian Area Regulation (RAR) assessment was triggered by a proposal to undertake development in the Stream, Lakes and Wetlands DPA within the 30m Riparian Assessment Area (RAA) for Cicero Slough Creek.



Figure 1: Existing house and gardens. The redevelopment plans for the property include replacement of this single-family dwelling with a new home on an expanded footprint.



Figure 2: Overview map showing the location of the subject property (red polygon & yellow arrow) on Denman Island. Image source: GoogleEarth.

2. Riparian: DPA #4 Streams, Lakes & Wetlands

Fisheries Resources and Geographical Context

The subject property at 3131 Jemima Road lies within the Graham Lake Watershed and abuts the shoreline of Graham Lake. One stream, Cicero Slough Creek, flows southeast through the property and into Graham Lake (Figure 3). Water from Graham Lake flows down Graham Lake Creek in a southeasterly direction, discharging into Lambert Channel on the east side of Denman Island.

It should be noted that Cicero Slough Creek is not a gazetted stream name. This unnamed creek flows from Cicero Slough to Graham Lake and has been labeled Cicero Slough Creek for ease of discussion.

The subject property extends from Jemima Road to the shoreline of Graham Lake. The property has been extensively logged in the past; numerous old logging roads, now trails, traverse the landscape. The property is currently developed with one single-family dwelling, associated gardens, parking area and a small shed. The site is largely vegetated with a regenerating stand or second (or third) growth trees. Presently, the property is accessed through a long shared driveway that traverses the adjacent properties to the east (Figure 4). The driveway crosses Cicero Slough Creek in an existing wood log culvert (remnant of logging activities).

Graham Lake is a fish-bearing lake. A search through the Provincial Fisheries Information Summary System (FISS) provided fish observation information for Graham Lake and indicated that the lake was historically (1924) stocked with cutthroat trout (*Oncorhynchus clarki clarki*) (MOE, 2016). No other fish species observations were listed in the FISS system; however, scientific fish collection permit records indicate that the University of British Columbia, Zoology Department, undertook a research project on the ecology and evolution of threespine stickleback (*Gasterosteus aculeatus*) in a number of small lakes and included fish sampling of threespine stickleback in Graham Lake. Fish collection permit records also revealed a graduate level study of prickly sculpin (*Cottus asper*) through the University of Calgary that included sampling of prickly sculpin in Graham Lake. Finally, it is worth noting that downstream of Graham Lake, Graham Lake Creek is known to support populations of coho salmon (*Oncorhynchus kisutch*).

Though fisheries information could not be found for Cicero Slough or Cicero Slough Creek, Cicero Slough Creek is assumed to be fish bearing, given its direct connection to Graham Lake. No barriers to the upstream migration of fish were observed during the field assessment of Cicero Slough Creek. No fish trapping studies have been conducted to verify the presence or absence of fish in Cicero Slough Creek. Given that Cicero Slough Creek is assumed to be fish-bearing and is directly connected to known fish-bearing waters downstream (Graham Lake), it is subject to the Riparian Area Regulation (RAR).

An RAR assessment was undertaken and documented using the forms in the Provincial Methodology. Given that the Islands Trust is currently in the process of amending the Land use Bylaw with respect to the RAR at this time, the RAR report has not been uploaded to the Ministry website. The RAR forms and site plan are included in Appendix A.



Figure 3: Aerial photo map of Graham Lake, Cicero Slough, Cicero Slough Creek and the subject property at 3131 Jemima Road (outlined in red) showing the configuration of the aquatic landscape features. Image source: GoogleEarth.



Figure 4: Aerial photograph of the subject property (outlined in red) showing the current site configuration. Image source: Map Islands Trust (MapIT).

Observations of Stream Channels and Vegetation

Graham Lake

Graham Lake has a surface area of approximately 15.4ha and an estimated catchment area of approximately 1km². It is used as a domestic water supply for the Graham Lake Improvement District (Koers & Associates, 2009). The lake is characterized by two depressions linked together by a shallow wetland area. Graham Lake has a thick wetland fringe around the perimeter, particularly on the north bank, which contains a significant amount of large woody debris and supports emergent plants. Where Cicero Slough Creek flows into Graham Lake (on the adjacent property to the east) it forms a delta with multiple stream channels flowing through wetland vegetation. This thick fringe of wetland plants stabilizes the lakeshore and protects the shoreline from potential erosion which could be caused by wind or wave events or overland flow.

Vegetation species present in the riparian area of Graham Lake include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*), black hawthorn (*Crataegus douglasii*), willows (*Salix spp.*), hardhack (*Spiraea douglasii*), salmonberry (*Rubus spectabilis*), baldhip rose (*Rosa gymnocarpa*), sedges (*Carex spp.*), rushes (*Juncus spp.*), bracken fern (*Pteridium aquilinum*), salal (*Gaultheria shallon*) and cattail (*Typha latifolia*).

The High Water Mark of the lake was identified by the assessment team to establish the 30m Riparian Assessment Area (RAA) and 15m Streamside Protection and Enhancement Area (SPEA), under the provincial RAR. It should be noted, that no new development is proposed within the 30m RAA or the 15m SPEA for Graham Lake. There are some existing footpaths present within the RAA, located on old logging roads, and a small dock which will be retained. Graham Lake has been included in this detailed RAR assessment for completeness and as a guide to potential future development on the site.

The area of land between the proposed development and the shoreline of Graham Lake is well vegetated with a regenerating stand of second (or third) growth conifers and a well-developed shrub understory. This area provides a good vegetated buffer between proposed development activities which will utilize an existing disturbed area which lies a minimum of 40m from the lakeshore.

The SPEA for Graham Lake is 15m. Additionally there is a covenant on the property (Covenant K114311) that prescribes no buildings to be sited within 7.5m and no disturbance of vegetation within 7.0m of the natural boundary of Graham Lake. Both of these setbacks will be exceeded, as there is no development or disturbance of vegetation proposed within 40m of Graham Lake.



Figure 5: North bank of Graham Lake; photograph taken looking southeast at the delta from Cicero Slough Creek.



Figure 6: Shoreline of Graham Lake; photograph taken from the subject property looking west across the lake. Note the woody debris and fringe of emergent vegetation around the lake perimeter.



Figure 7: Shoreline of Graham Lake; photograph taken looking north along the shoreline of the subject property. Note the woody debris and fringe of emergent vegetation around the lake perimeter. Also of note, on the day of assessment, the lake had a moderate degree of turbidity following a period of heavy rainfall.



Figure 8: An existing lakefront path has been established along an old logging road and parallels the shoreline of Graham Lake.



Figure 9: Existing footpath from the home/garden to Graham Lake (southeast path). This is one of two existing footpaths from the development to the lake. All of the existing footpaths have been established on old logging roads.

Cicero Slough Creek

Cicero Slough Creek is a significant tributary to Graham Lake. The headwaters of this stream are Cicero Slough, a large wetland located northwest of the subject property. Historically, Cicero Slough was dredged to enable its use as a storage reservoir for a large water license (Koers & Associates, 2009).

Cicero Slough Creek flows southeast through the subject property in a ravine and flows into Graham Lake on the adjacent property to the east. No barriers to the upstream migration of fish were observed. Characteristic of most of the streams on Denman Island, Cicero Slough normally lacks surface flow for at least a five-month period between June to October. At the time of the field assessment (January 2016), the creek was flowing with a significant volume and velocity – See photographs below.

Cicero Slough Creek is a steep and deeply entrenched channel flowing through glacial till. Streambed materials are primarily gravel with lesser amounts of boulders, cobble, and sand; a few areas of exposed bedrock were observed. This reach is a cascading channel with step pools supported by large woody debris and boulders.

The banks of the stream channel contain several veteran stumps, logged with springboards and fire-scared from a forest fire which occurred after the logging. It is likely that stream downcutting was accelerated by logging activities, creating the deep ravine we see today. Undercut banks were observed in several locations throughout the property suggesting that the stream has reached hardpan or bedrock and is trying to widen itself by eroding and undercutting the banks. Some of the trees on the ravine banks exhibit buttress wood.

Vegetation species present in the riparian area of Cicero Slough Creek include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), red huckleberry (*Vaccinium parvifolium*), common horsetail (*Equisetum arvense*), salal (*Gaultheria shallon*), and red elderberry (*Sambucus racemosa*).

The existing driveway crosses the stream at the approximate mid-point of the property. The stream crossing structure is an old log crib culvert, likely a remnant of logging activities, and appears to be in good condition. Similar log crib culverts are present immediately upstream and downstream of the subject property. The new proposed development will utilize this existing stream crossing; replacement of the structure is not anticipated. Future replacement of the log crib culvert will require a Section 9 Water Sustainability Act permit.

The SPEA for Cicero Slough Creek is 10m. Additionally, there is a covenant on the property (Covenant K114311) that prescribes no buildings to be sited within 15.0m and no disturbance of vegetation within 6.1m of Cicero Slough Creek. Both of these setbacks will be achieved, as there is no new development or disturbance of vegetation proposed within 15.0m of Cicero Slough Creek.



Figure 10: Cicero Slough Creek near the downstream (southeast) property boundary. Photograph taken looking upstream shows some undercutting of the streambank.



Figure 11: Photograph looking upstream at Cicero Slough Creek shows the shape of the ravine near the downstream (southeast) property boundary.



Figure 12: Large wood debris present in Cicero Slough Creek is dominated by old veteran logs which are almost rotted out; remnants of the historical logging activities.



Figure 13: Photograph of Cicero Slough Creek looking downstream from the driveway crossing. This portion of the reach has the lowest stream gradient. Note the size of the veteran stump compared to the existing trees.



Figure 14: Upstream of the driveway crossing, adjacent to the existing garden, the tree canopy is more open and results in a dense community of understory shrubs in Cicero Slough Creek.



Figure 15: Photograph looking downstream at Cicero Slough Creek showing the shape of the ravine near the upstream (northwest) property boundary. The stream is down cutting and is entrenched near the upstream property boundary.

3. Recommendations

Measures - Protection of the Riparian Retention Area and Encroachment

Trees and understory vegetation in the stream ravine for Cicero Slough Creek and the SPEA for Graham Lake are a riparian retention area and must be protected.

No development is proposed within the stream ravine or within 40m of Graham Lake, so disturbance is not anticipated. This will be accomplished by ensuring that the edge of these protected areas is well-marked to ensure that personnel and equipment do not encroach into this area or (i.e., no development of any form shall be permitted within the ravine and no residential development shall be permitted beyond the existing edge of disturbance upslope of Graham Lake). Particular attention should be paid to the layout of any paved areas, such as roads and driveways, to ensure that all runoff is prevented from causing harm, damage, or destruction to any vegetation within the stream ravine.

Encroachment refers to the problem of disturbance of the riparian vegetation in the SPEA by trampling, unsanctioned trails and dumping of yard waste, etc.

- During construction activities, the Top of Ravine Bank must be marked through the use of temporary orange snow fencing and signage (on both banks). Additionally, temporary fencing must also be erected along the existing edge of disturbance upslope of Graham Lake to prevent encroachment into these protected areas.
- Temporary orange snow fencing demarcating the edge of protected areas must be implemented prior to ANY works on the site, including tree removal, grubbing, clearing, or the storage of any construction related materials, including heavy equipment.

Measures - Danger Trees in the SPEA

The majority of this property has been historically logged, likely multiple times since the early 1900's. The riparian areas along Graham Lake and the ravine slopes along Cicero Slough Creek were completely logged when the original timber was extracted. The site is currently regenerating with a maturing second (or third) growth stand of trees dominated by conifers. The majority of trees on the property are quite young, with a few more mature trees interspersed.

The stream corridor contains many mature trees which are large enough to strike the existing and proposed development. Generally speaking, trees in the riparian area appear to be in good health. However, during the field assessment of Cicero Slough Creek, it was noted that there is one large western hemlock (*Tsuga heterophylla*) that has been undermined by the stream and leans towards the existing house. Trees in the SPEA that are part of a riparian retention area can only be removed or modified if they are deemed Danger Trees by a qualified professional.

- All trees within striking distance of the proposed development must be assessed by an arborist, who is a certified danger tree assessor, to evaluate their condition and prescribe any mitigation measures.



Figure 16: Large western hemlock tree located near the existing house has been undermined by Cicero Slough Creek (yellow arrow) and is a likely Danger Tree.



Figure 17: Large western hemlock tree located near the existing house has been undermined by Cicero Slough Creek (yellow arrow) and is a likely Danger Tree.



Figure 18: Large western hemlock tree (yellow arrow) that has been undermined by Cicero Slough Creek (yellow arrow) leans towards the existing house (red polygon).



Figure 19: Large western hemlock tree (yellow arrow) that has been undermined by Cicero Slough Creek and leans towards the existing house.

All of the proposed development will be undertaken in existing cleared/disturbed areas, so disturbance of trees is not anticipated. Trees within the Cicero Slough Creek ravine or SPEA must be protected, including root zones which may extend beyond the edge of the SPEA/ravine.

- In areas where construction will be conducted near the top of ravine bank, an arborist must be retained to assess the health and protection needs of the trees in and immediately adjacent to the SPEA.

In the event that any trees are considered hazardous, they can be managed so as to maximize their benefit to aquatic and terrestrial ecosystems, while minimizing their risk to people and property.

If trees need to be removed:

- Where ever possible, some of the trees should be left to decompose on site, especially in the SPEA to provide woody debris on the ground as small mammal and amphibian habitat and to provide a substrate for mosses.

Management options to be considered for Hazard Trees include:

- Topping and/or pruning, to prevent dead branches from falling on people or property;
- Where necessary, cutting most of the tree down, while leaving a large section of trunk still standing as a wildlife tree, to provide habitat/food;
- Pushing a tree over and into the stream and/or SPEA, preferably with its root wad intact, so as to augment the supply of large wood. The root wad helps anchor the tree against the bank and provides micro-sites for terrestrial wildlife among the roots and in the depression.

Measures - Windthrow

Windthrow (trees knocked over due to wind) can be a risk to people and property, and if excessive, can result in a loss of function of riparian vegetation in the SPEA. Windthrow is especially a risk where the adjacent forest has been cleared, leaving the remaining trees more vulnerable.

Clearing of this site occurred historically and the proposed development will be undertaken entirely in existing cleared areas, so it is not anticipated that any additional windthrow will occur *ie.* the forest edge has had a chance to stabilize.

Some tree mortality is expected in functional ecosystems, and isolated cases are not necessarily a cause for concern. Fallen trees should therefore not be removed from the site unless they present a safety risk.

Possible strategies to prevent windthrow include:

- Protecting root zones of large trees from compaction;
- “Feathering” or topping adjacent trees to provide a gradual slope for wind to pass over.

Protecting root zones, particularly of large trees with stabilizing root zones located in the stream ravine, will require protected zones sized according to the rule of thumb that each inch of trunk diameter at breast height (DBH) requires a protected root zone with a radius of one foot (*e.g.* a tree with a 24-inch DBH would require a circular protected zone with a radius of 24 feet). An arborist will be able to determine when and where such zones are required.

- As the proposed development of the house, septic and outbuildings will be undertaken in an existing disturbed area, changes to the windthrow patterns in the SPEA are not anticipated. Therefore no further measures are required with respect to windthrow.
- If development plans change such that tree clearing is proposed adjacent to the SPEA, an arborist should be retained to assess the health and windthrow protection needs of the trees in and immediately adjacent to the SPEA.

Measures - Septic

The existing septic system needs to be upgraded and a new septic field will be installed as part of the property redevelopment. The stream has a recommended 30m septic setback and Graham Lake has a recommended 60m septic setback. It is worth noting that these two setbacks overlap, leaving no practical location on the property for the septic field. Given these constraints, the development team has carefully reviewed site conditions on the ground to identify the best location for the septic field to maximize treatment for the protection of human and ecological health.

The proposed location for the septic field is in an existing cleared area at the top of ravine bank on the south side of Cicero Slough Creek. Utilizing the disturbed area will keep new vegetation disturbance to a minimum. The proposed septic field location lies about 20m away from the stream; it is outside of the ravine, SPEA and Covenant Area. The topography of the proposed septic field location slopes towards Graham Lake. The area between the septic field location and Graham Lake is completely vegetated with a moderate slope. There is an existing footpath on the lower slope, but it lies at least 30m away of the septic field location. The intact vegetation and soils will provide treatment to the effluent before it reaches Graham Lake. **No ecological impacts are anticipated from the proposed septic field location.**

- The vegetation that lies between the proposed septic field location and Graham Lake must be left intact.

Measures - Slope Stability

No development or disturbance of vegetation within the Cicero Slough Creek ravine is anticipated. Though there is some bank erosion and undercutting occurring within the stream channel, an abundance of moss on rocks and wood in the stream suggests that it is relatively stable. No obvious slumps or failures were observed.

- No specific recommendations regarding slope stability of the Cicero Slough Creek ravine or SPEA are necessary.

General recommendations for slope stability include:

- No new trails should be constructed on or near steep slopes.
- No stormwater will be directed onto any steep slopes, particularly channelized, concentrated flows.
- Stormwater will be infiltrated at the source and/or directed to a suitable detention/treatment facility and discharged as sheet flow onto vegetated areas.
- Education should be carried out to ensure that residents do not dump yard waste or other refuse onto steep slopes.

Measures - Sediment and Erosion Control During Construction/Pollution Prevention Plan

The developer is responsible for designing an effective erosion and sediment control plan to ensure that during construction, no sediment-laden water enters Cicero Slough Creek or Graham Lake, and that erosion of exposed soils does not occur such that the riparian area is damaged. These receiving environments are both fish habitat and Graham Lake is also a public drinking water supply. **Therefore, there is zero tolerance for turbid or sediment-laden runoff entering these environments. The RAR also prohibits treatment, including infiltration, of stormwater within the SPEAs for Cicero Slough Creek and Graham Lake.**

The Federal Fisheries Act prohibits the deposition of a deleterious substance (including sediment) in water frequented by fish. Furthermore, any stormwater discharges into adjacent downstream receiving environments (especially freshwater ecosystems) must ensure that the Federal and Provincial water quality Guidelines for the protection of aquatic life are not exceeded in the receiving environments. The Federal Guidelines are administered by the Canadian Council of Ministers of the Environment (CCME) and Provincial Guidelines are administered by the B.C. Ministry of Environment (BC MoE). In order to comply with the Act and Guidelines, it is essential that any Erosion and Sediment Control Plan be designed to an adequate standard.

Three documents that outline general principles and approaches for managing stormwater and controlling sediment and erosion are:

- "Stormwater Planning: a Guidebook for British Columbia," produced by BC MoE (2002);
- "Land Development Guidelines for the Protection of Aquatic Habitat," produced by DFO (1992); and
- "Storm water management for industrial activities: developing pollution prevention plans and best management practices," produced by the U.S. Environmental Protection Agency (1992).

The EPA (1992) document has been found to be the most stringent in its standards and best management practices (BMPs), which meet and exceed provincial BMPs and guidelines. The principal requirement of the US EPA method is the development of a Stormwater Pollution Prevention Plan (SPPP or PPP), which must be implemented prior to commencement of any on-site construction activity. Guidelines for the implementation of a Pollution Prevention Plan are outlined below:

- If possible, avoid scheduling construction activities during the winter months when heavy rains are more frequent. This will significantly reduce erosion and sediment control risks.
- Always maintain a clean and organized work area.
- Stage work to minimize the disturbed area and duration of exposure.
- Ensure that existing site services (e.g. water, sewer and gas connections) are properly capped and any drainage is directed away from the creek and exposed soils.
- Ensure that debris from demolition is properly contained and that debris does not enter the creek.

- Silt fences should be used to prevent sediment laden water from entering riparian areas. Silt fences are useful for slowing, diverting and preventing runoff from entering a watercourse, it is not appropriate to use silt fences to try and filter flowing turbid water.
- Prevent upslope water from running over disturbed areas, using diversion berms or other methods to intercept flows.
- Wherever possible, preserve vegetation and cover soils. Stabilize disturbed areas as quickly as possible with temporary or permanent covers (*e.g.* straw/mulch, grass seed, tarp *etc.*).
- Ensure runoff velocities are maintained at the lowest practical value. Maintain sheet flow and avoid channelizing runoff.
- Use site-specific sediment control structures to ensure suspended solids are retained on-site wherever possible.
- Avoid the siting of soil and debris stockpiles near the top of the ravine bank.
- Prepare for and clean up any and all spills. Repair all equipment oil and fuel leaks. A Spill Cleanup Kit should be included as part of the heavy equipment operators' Standard Operating Procedures; all equipment operators should be properly trained in the use of the Spill Cleanup Kits.
- Take care when using concrete and ensure that fresh concrete and concrete wash water do not runoff into the stream or lake. Un-cured concrete and concrete wash water is extremely toxic to aquatic organisms.
- Avoid the unnecessary use of water for cleaning to minimize the subsequent need for treatment of suspended solids.
- Ensure the regular inspection and monitoring of sediment control structures (*e.g.* silt fences, settling ponds *etc.*) as part of the construction program, particularly after rainstorm events. Remove sediment build-up to ensure continued effectiveness.

Measures - Stormwater Management

Care should be taken when designing the stormwater management measures to ensure there are no deleterious effects to the Cicero Slough Creek or Graham Lake (quality or quantity of water). Stormwater flows off the site **MUST** be treated, and detained, prior to entering Cicero Slough Creek or Graham Lake and flows must be discharged into the stream in a manner that prevents channelization and erosive forces. These receiving environments are both fish habitat and Graham Lake is also a **public drinking water supply**. Therefore, there is zero tolerance for untreated runoff entering these environments.

- A stormwater management strategy must be considered and implemented prior to any construction beginning on the dwelling and/or any out buildings, septic or driveway.

Stormwater management systems can simultaneously deliver benefits to the development and to the function of surrounding ecosystems. If implemented as part of a whole-system approach, these benefits can often be accomplished along with savings in development costs.

Recommended principles of stormwater management include:

- Using the Water Balance Model to predict and minimize development impacts on the hydrology of the site.
- Planning the layout to maximize vegetated landscapes, to maintain and/or enhance wildlife habitat, and to minimize impervious surfaces and the generation of point source stormwater runoff.
- Increasing infiltration of rainwater into the ground and minimizing stormwater runoff, by limiting impervious surfaces, using permeable hard surfaces such as permeable pavers, pervious concrete, etc., and using technologies such as infiltration trenches, vegetated swales, and cisterns for rainwater collection/reuse.
- Retaining and replanting native vegetation in order to simultaneously increase wildlife habitat, prevent erosion, and create greenways.
- Ensuring that no water is discharged or infiltrated such that it would destabilize steep slopes, stream banks or cause sedimentation of riparian areas.
- Avoid channelizing flows and discharge runoff as sheet-flow to mimic pre-development conditions whenever possible.
- Select roof membrane materials that are appropriate and do not leach pollutants and toxins, roof runoff does not require treatment prior to discharge into the ground or stream. However, if discharging to the stream, roof runoff will require some type of energy dissipation/detention to prevent erosive damage.

Measures - Environmental Monitoring During Construction

According to the U.S. EPA, **“the most environmentally dangerous period of development is the initial construction phase when land is cleared of vegetation and graded to create a proper surface for construction”**.

The site should be inspected/monitored regularly to ensure that no erosion or sedimentation is occurring and that the riparian zone and water quality of the streams are protected. The use of repeat photography is a simple method for documenting site conditions and should be a core component of the environmental monitoring program – this method is called Photopoint Monitoring.

Photopoint Monitoring is a standardized procedure, developed largely by Dr. Fred Hall of the U.S. Forest Service, for taking precisely replicable photographs of resources that require long-term management (Hall, 2001). Photopoint Monitoring is both a qualitative and quantitative tool that can assist in detecting unacceptable conditions in target resources *before* severe or irreversible changes occur, and *allow time* to implement corrective actions.

Monitoring Recommendations:

- Prior to demolition or any new construction (*i.e.* prior to site disturbance), key locations on the site for monitoring photographs should be chosen. These should be locations which will not be disturbed by the development activities and enable photography of key site features (*e.g.* view of water quality in Cicero Slough Creek upstream of development activities and downstream of activity). These locations should be used as Photopoint monitoring locations where regular

-
- photographs will be taken (camera locations).
 - Photos should be time and date stamped and stored in a central location for future reference if requested.
 - During construction, the site should be inspected on a weekly basis and after every significant rainstorm (10mm or greater). Repeat photos should be taken at each camera location as well as candid photos showing activities of interest and the general condition of the site.

The intent with environmental monitoring is to document changes to the landscape and that any such changes to the landscape have not resulted in harm to the ecology of the site or watershed.

References

B.C. Ministry of Environment. EcoCat: The Ecological Reports Catalogue. Keyword Query for Graham Lake. Performed February 5, 2016. URL: <http://a100.gov.bc.ca/pub/acat/public/search.do>

B.C. Ministry of Environment. Fisheries Information Summary System (FISS). Fisheries Inventory Data Queries. Single Waterbody Query: Waterbody Summary Information. Fish Presence Report. Data Query performed for Graham lake; February 5, 2016.

B.C. Ministry of Environment. 2002. Stormwater Planning: a Guidebook for British Columbia. <http://www.env.gov.bc.ca/epd/epdpmpp/stormwater/stormwater.html>

Department of Fisheries and Oceans Canada. 1992. Land Development Guidelines for the Protection of Aquatic Habitat.

Hall, F.C., 2001. Ground-based photographic monitoring. Gen. Tech. Rep. PNW-GTR-503. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 340 p. <http://www.fs.fed.us/pnw/pubs/gtr503/>

Koers & Associates Engineering Ltd. 2009. Denman Island Water Local Service Area Graham Lake Source Study. Prepared for the Comox Valley Regional District. Courtenay, BC. 64pp.

RIPARIAN AREA MANAGEMENT TR-1737-15, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas; Don Prichard, John Anderson, Cindy Correll, Jim Fogg, Karl Gebhardt, Russ Krapf, Steve Leonard, Brenda Mitchell, and Janice Staats. 1998. U.S. Department of the Interior, Bureau of Land Management, National Applied Resource Sciences Center, P.O. Box 25047, Denver, CO 80225-0047 (BLM/RS/ST-98/001+1737)

United States Environmental Protection Agency (EPA). 1992. Storm water management for industrial activities: developing pollution prevention plans and best management practices. EPA-833-R-92-005.

4. Appendix A: RAR Assessment Forms

Riparian Areas Regulation: Assessment Report

Please refer to submission instructions and assessment report guidelines when completing this report.

Date January 28, 2016

I. Primary QEP Information

First Name	William	Middle Name	Patrick
Last Name	Lucey		
Designation	R.P. Bio	Company:	Aqua-Tex Scientific Consulting Ltd.
Registration #	1467	Email:	aqua-tex@islandnet.com
Address	201- 3690 Shelbourne Street		
City	Victoria	Postal/Zip	V8P 4H2
Prov/state	BC	Country	Canada
		Phone #	250-598-0266

II. Secondary QEP Information (use Form 2 for other QEPs)

First Name		Middle Name	
Last Name			
Designation		Company:	
Registration #		Email:	
Address			
City		Postal/Zip	
Prov/state		Country	
		Phone #	

III. Developer Information

First Name	Ryan	Middle Name	
Last Name	Macleod		
Company	Citizen Design Build Inc.		
Phone #	250-590-3960	Email:	serrah@citizenbuilding.ca
Address	2785 Murray Drive		
City	Victoria	Postal/Zip	V9A 2S4
Prov/state	BC	Country	Canada

IV. Development Information

Development Type	Recreational		
Area of Development (ha)	0.50	Riparian Length (m)	132
Lot Area (ha)	3.15	Nature of Development	Re-development
Proposed Start Date	February 2016	Proposed End Date	February 2018

V. Location of Proposed Development

Street Address (or nearest town)	3131 Jemima Road		
Local Government	Islands Trust	City	Denman Island
Stream Name	Cicero Slough Creek & Graham Lake		
Legal Description (PID)	000-980-820	Region	1 Vancouver Island
Stream/River Type	Stream & Lake	DFO Area	14 Oyster River, Parksville
Watershed Code	905-124500-86600 (Graham Lake)		
Latitude	49°	30'	52.3"
Longitude	124°	45'	35.0"

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed.
Insert that form immediately after this page.

Results of Riparian Assessment (SPEA width)

Cicero Slough Creek

Refer to Chapter 3 of Assessment Methodology

Date: 16-Jan-28

Description of Water bodies involved (number, type)

Stream

Stream ☒

Wetland ☐

Lake ☐

Ditch ☐

Number of reaches

Reach #

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)	Gradient (%)
starting point	1.9	
upstream	1.8	
	2.2	12
	2.3	
	1.8	
	2.2	4
downstream	2.0	2
	1.7 *	
	4.0 *	
	2.5	9
	2.0	7
Total: minus high /low	18.7	
mean	2.1	6.8
	R/P	C/P S/P
Channel Type		X

I, Wm. Patrick Lucey R.P.Bio., hereby certify that:

a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No
SPVT Polygons	☐	☒

Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

I, Wm. Patrick Lucey R.P.Bio., hereby certify that:

a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;

c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Polygon No:

SPVT Type

LC	SH	TR
☐	☐	☒

Method employed if other than TR

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons				
LWD, Bank and Channel Stability ZOS (m)	10m					
Litter fall and insect drop ZOS (m)	10m					
Shade ZOS (m) max	6.3m	South bank	Yes		No	X
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)					
Ditch Fish Bearing	Yes		No		If non-fish bearing insert no fish bearing status report	
SPEA maximum	10.0m	(For ditch use table3-7)				

Segment No:	2	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons				
LWD, Bank and Channel Stability ZOS (m)	10m					
Litter fall and insect drop ZOS (m)	10m					
Shade ZOS (m) max	6.3m	South bank	Yes	X	No	
SPEA maximum	10.0m	(For ditch use table3-7)				

Segment No:		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons				
LWD, Bank and Channel Stability ZOS (m)						
Litter fall and insect drop ZOS (m)						
Shade ZOS (m) max		South bank	Yes		No	
SPEA maximum		(For ditch use table3-7)				

I, Wm. Patrick Lucey R.P.Bio, hereby certify that:

- I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;
- I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
- In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Comments

- This is an un-gazetted (unnamed) stream which flows from Cicero Slough to Graham Lake; it has been labeled Cicero Slough Creek for ease of discussion.
- Stream flowing in a ravine.
- No barriers to the upstream migration of fish were observed.
- Cicero Slough normally lacks surface flow for at least a five-month period between June to October.
- Cicero Slough Creek is a steep and deeply entrenched channel flowing through glacial till; cascading channel with step pools supported by large woody debris and boulders.
- Undercut banks were observed in several locations throughout the property.
- Driveway stream crossing structure is an old log crib culvert.
- Vegetation species present in the riparian area of Cicero Slough Creek include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), red huckleberry (*Vaccinium parvifolium*), common horsetail (*Equisetum arvense*), salal (*Gaultheria shallon*), and red elderberry (*Sambucus racemosa*).

Graham Lake

Refer to Chapter 3 of Assessment Methodology

Date: 16-Jan-28

Description of Water bodies involved (number, type)

Lake

Stream

Wetland

Lake

Ditch

Number of reaches

1

Reach #

1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)	Gradient (%)
starting point	n/a	
upstream		
downstream		
Total: minus high /low		
mean	n/a	n/a
	R/P	C/P
Channel Type	Lake	Lake

I, Wm. Patrick Lucey R.P.Bio., hereby certify that:

e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

f) I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;

g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No
SPVT Polygons		X

Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes

I, Wm. Patrick Lucey R.P.Bio., hereby certify that:

e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

f) I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;

g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Polygon No: 1

LC SH TR

SPVT Type

Method employed if other than TR

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)	15						
Litter fall and insect drop ZOS (m)	15						
Shade ZOS (m) max	30	South bank	Yes		No	X	
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)						
Ditch Fish Bearing	Yes		No		If non-fish bearing insert no fish bearing status report		
SPEA maximum	15.0m	(For ditch use table3-7)					

Segment No:	2	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)							
Litter fall and insect drop ZOS (m)							
Shade ZOS (m) max		South bank	Yes		No		
SPEA maximum		(For ditch use table3-7)					

Segment No:		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)							
Litter fall and insect drop ZOS (m)							
Shade ZOS (m) max		South bank	Yes		No		
SPEA maximum		(For ditch use table3-7)					

I, Wm. Patrick Lucey R.P.Bio, hereby certify that:

e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

f) I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;

g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Comments

- Graham Lake used as a domestic water supply for the Graham Lake Improvement District.
- Graham Lake has a thick wetland fringe around the perimeter, particularly on the north bank.
- There are some existing footpaths present within the RAA, located on old logging roads, and a small dock which will be retained.
- Land between the proposed development and the shoreline of Graham Lake is well vegetated with a regenerating stand of second (or third) growth conifers and a well-developed shrub understory. This area provides a good vegetated buffer between proposed development activities which will utilize an existing disturbed area which lies a minimum of 40m from the lakeshore.
- Vegetation species present in the riparian area of Graham Lake include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*), black hawthorn (*Crataegus douglasii*), willows (*Salix spp.*), hardhack (*Spiraea douglasii*), salmonberry (*Rubus spectabilis*), baldhip rose (*Rosa gymnocarpa*), sedges (*Carex spp.*), rushes (*Juncus spp.*), bracken fern (*Pteridium aquilinum*), salal (*Gaultheria shallon*) and cattail (*Typha latifolia*).

Measures to Protect and Maintain the SPEA

This section is required for detailed assessments. Attach text or document files, as need, for each element discussed in chapter 1.1.3 of Assessment Methodology. It is suggested that documents be converted to PDF *before* inserting into the assessment report. Use your "return" button on your keyboard after each line. You must address and sign off each measure. If a specific measure is not being recommended a justification must be provided.

1. Danger Trees	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
2. Windthrow	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
3. Slope Stability	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
4. Protection of Trees	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
5. Encroachment	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
6. Sediment and Erosion Control	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
7. Stormwater Management	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
8. Floodplain Concerns	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	

Professional Opinion

Assessment Report Professional Opinion on the Development Proposal's riparian area.

Date March 10, 2016

1. I/We Wm. Patrick Lucey R.P.Bio.

Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.

hereby certify that:

- a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- b) I am/We are qualified to carry out the assessment of the proposal made by the developer Ryan Macleod, which proposal is described in section 3 of this Assessment Report (the "development proposal");
- c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
- d) In carrying out my/our assessment of the development proposal, I have/We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

- a) ☐ if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, **OR**
(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)
- b) ☒ if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

[NOTE: "qualified environmental professional" means an applied scientist or technologist, acting alone or together with another qualified environmental professional, if

- (a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association,
- (b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal, and
- (c) the individual is acting within that individual's area of expertise.

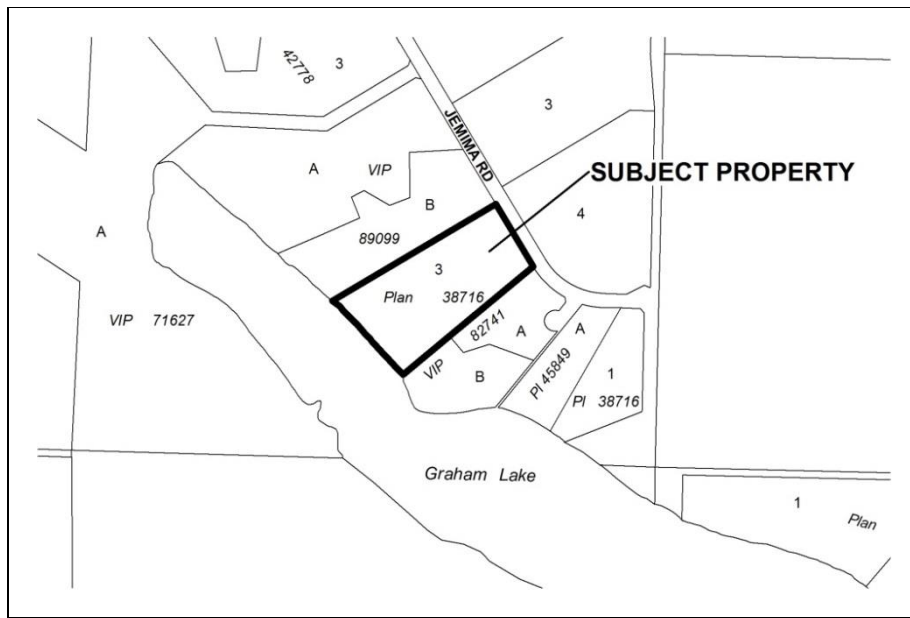


NOTICE
DENMAN ISLAND LOCAL TRUST COMMITTEE
TEMPORARY USE PERMIT
DE-TUP-2016.1 (Lundberg)

NOTICE is hereby given that the Denman Island Local Trust Committee will be considering a resolution allowing the issuance of a Temporary Use Permit, pursuant to Section 493 of the *Local Government Act*. The proposed permit would apply to Lot 3, Section 13, Denman Island, Nanaimo District, Plan 38716 (PID: 000-980-820), 3131 Jemima Road.

The purpose of this Temporary Use Permit is to allow a “secondary dwelling unit” on the subject property. The establishment of the temporary use would be subject to a number of conditions specified in the permit. The permit would be issued for up to three years and the owner may apply to the Denman Island Local Trust Committee to have it renewed once for up to an additional three years.

The general location of the subject area is shown on the following sketch:



A copy of the proposed Permit may be inspected at the Islands Trust Northern Office, 700 North Road, Gabriola Island, BC, between the hours of 8:30 am to 4:00 pm, Monday to Friday inclusive, excluding statutory holidays, commencing **June 24, 2016** and continuing up to and including **July 4, 2016**.

For the convenience of the public only, and not to satisfy Section 494(1)(a) of the *Local Government Act*, a copy of the proposed Permit may be inspected at the Denman Island General Store notice board located at 1069 North West Road, Denman Island, BC, and the Marcus Isbister Old School Centre notice board located at 5901 Denman Road, Denman Island, BC. Also, attached for your convenience, is a copy of the proposed Permit.

Enquiries or comments should be directed to Marnie Eggen, Planner 2 at (250) 247-2210, for Toll Free Access, request a transfer via Enquiry BC: In Vancouver 604-660-2421 and elsewhere in BC 1-800-663-7867; or by fax (250) 247-7514; or by email to: meggen@islandstrust.bc.ca, before **4:00 p.m., July 4, 2016**. The Denman Island Local Trust Committee may consider a resolution allowing for the issuance of the permit during the regular business meeting starting at **10:30 a.m., July 5, 2016**, at the Denman Island Seniors Hall, located at 1111 Northwest Road, Denman Island, BC

All applications are available for review by the public. Written comments made in response to this notice will also be available for public review.

Becky McErlean
Deputy Secretary

3131 Jemima Road Denman Island

Development Permit Report: Streams, Lakes and Wetlands



Prepared for: Citizen Design Build Inc.

March 17, 2016

Prepared By:

Tracy Motyer, B.Sc., R.B. Tech.

Patrick Lucey, M.Sc., R.P. Bio, C.Biol, MRSB

Table of Contents

1. Project Overview.....	3
Description of Proposed Development	3
2. Riparian: DPA #4 Streams, Lakes & Wetlands.....	5
Fisheries Resources and Geographical Context	5
Observations of Stream Channels and Vegetation.....	8
Graham Lake.....	8
Cicero Slough Creek.....	11
Site Plan.....	16
3. Recommendations.....	17
Measures - Protection of the Riparian Retention Area and Encroachment	17
Measures - Danger Trees in the SPEA	17
Measures - Windthrow.....	21
Measures - Septic.....	22
Measures - Slope Stability	22
Measures - Sediment and Erosion Control During Construction/Pollution Prevention Plan	23
Measures - Stormwater Management	24
Measures - Environmental Monitoring During Construction.....	25
References	27
4. Appendix A: RAR Assessment Forms	28
Results of Riparian Assessment (SPEA width).....	29
Cicero Slough Creek.....	29
Graham Lake.....	31
Measures to Protect and Maintain the SPEA.....	33
Professional Opinion	34

1. Project Overview

This report details the results of an ecological assessment of the subject property at 3131 Jemima Road, located on Denman Island (Figure 2). The purpose of the ecological assessment was to establish a baseline of site conditions and review proposed redevelopment plans for the property with particular attention to two Development Permit Areas (DPA): #2 Steep Slopes and #4 Streams, Lakes and Wetlands. This report addresses riparian ecosystems and Stream, Lakes and Wetlands DPA.

Description of Proposed Development

Redevelopment plans for the site include: reconstruction of the existing single-family dwelling with an expanded footprint, construction of a new guest house, construction of a new office outbuilding, removal of the existing shed and replacement with a new workshop, and installation of a new septic facility (see Site Plan).

This development permit area assessment and Riparian Area Regulation (RAR) assessment was triggered by a proposal to undertake development in the Stream, Lakes and Wetlands DPA within the 30m Riparian Assessment Area (RAA) for Cicero Slough Creek.



Figure 1: Existing house and gardens. The redevelopment plans for the property include replacement of this single-family dwelling with a new home on an expanded footprint.



Figure 2: Overview map showing the location of the subject property (red polygon & yellow arrow) on Denman Island. Image source: GoogleEarth.

2. Riparian: DPA #4 Streams, Lakes & Wetlands

Fisheries Resources and Geographical Context

The subject property at 3131 Jemima Road lies within the Graham Lake Watershed and abuts the shoreline of Graham Lake. One stream, Cicero Slough Creek, flows southeast through the property and into Graham Lake (Figure 3). Water from Graham Lake flows down Graham Lake Creek in a southeasterly direction, discharging into Lambert Channel on the east side of Denman Island.

It should be noted that Cicero Slough Creek is not a gazetted stream name. This unnamed creek flows from Cicero Slough to Graham Lake and has been labeled Cicero Slough Creek for ease of discussion.

The subject property extends from Jemima Road to the shoreline of Graham Lake. The property has been extensively logged in the past; numerous old logging roads, now trails, traverse the landscape. The property is currently developed with one single-family dwelling, associated gardens, parking area and a small shed. The site is largely vegetated with a regenerating stand or second (or third) growth trees. Presently, the property is accessed through a long shared driveway that traverses the adjacent properties to the east (Figure 4). The driveway crosses Cicero Slough Creek in an existing wood log culvert (remnant of logging activities).

Graham Lake is a fish-bearing lake. A search through the Provincial Fisheries Information Summary System (FISS) provided fish observation information for Graham Lake and indicated that the lake was historically (1924) stocked with cutthroat trout (*Oncorhynchus clarki clarki*) (MOE, 2016). No other fish species observations were listed in the FISS system; however, scientific fish collection permit records indicate that the University of British Columbia, Zoology Department, undertook a research project on the ecology and evolution of threespine stickleback (*Gasterosteus aculeatus*) in a number of small lakes and included fish sampling of threespine stickleback in Graham Lake. Fish collection permit records also revealed a graduate level study of prickly sculpin (*Cottus asper*) through the University of Calgary that included sampling of prickly sculpin in Graham Lake. Finally, it is worth noting that downstream of Graham Lake, Graham Lake Creek is known to support populations of coho salmon (*Oncorhynchus kisutch*).

Though fisheries information could not be found for Cicero Slough or Cicero Slough Creek, Cicero Slough Creek is assumed to be fish bearing, given its direct connection to Graham Lake. No barriers to the upstream migration of fish were observed during the field assessment of Cicero Slough Creek. No fish trapping studies have been conducted to verify the presence or absence of fish in Cicero Slough Creek. Given that Cicero Slough Creek is assumed to be fish-bearing and is directly connected to known fish-bearing waters downstream (Graham Lake), it is subject to the Riparian Area Regulation (RAR).

An RAR assessment was undertaken and documented using the forms in the Provincial Methodology. Given that the Islands Trust is currently in the process of amending the Land use Bylaw with respect to the RAR at this time, the RAR report has not been uploaded to the Ministry website. The RAR forms and site plan are included in Appendix A.

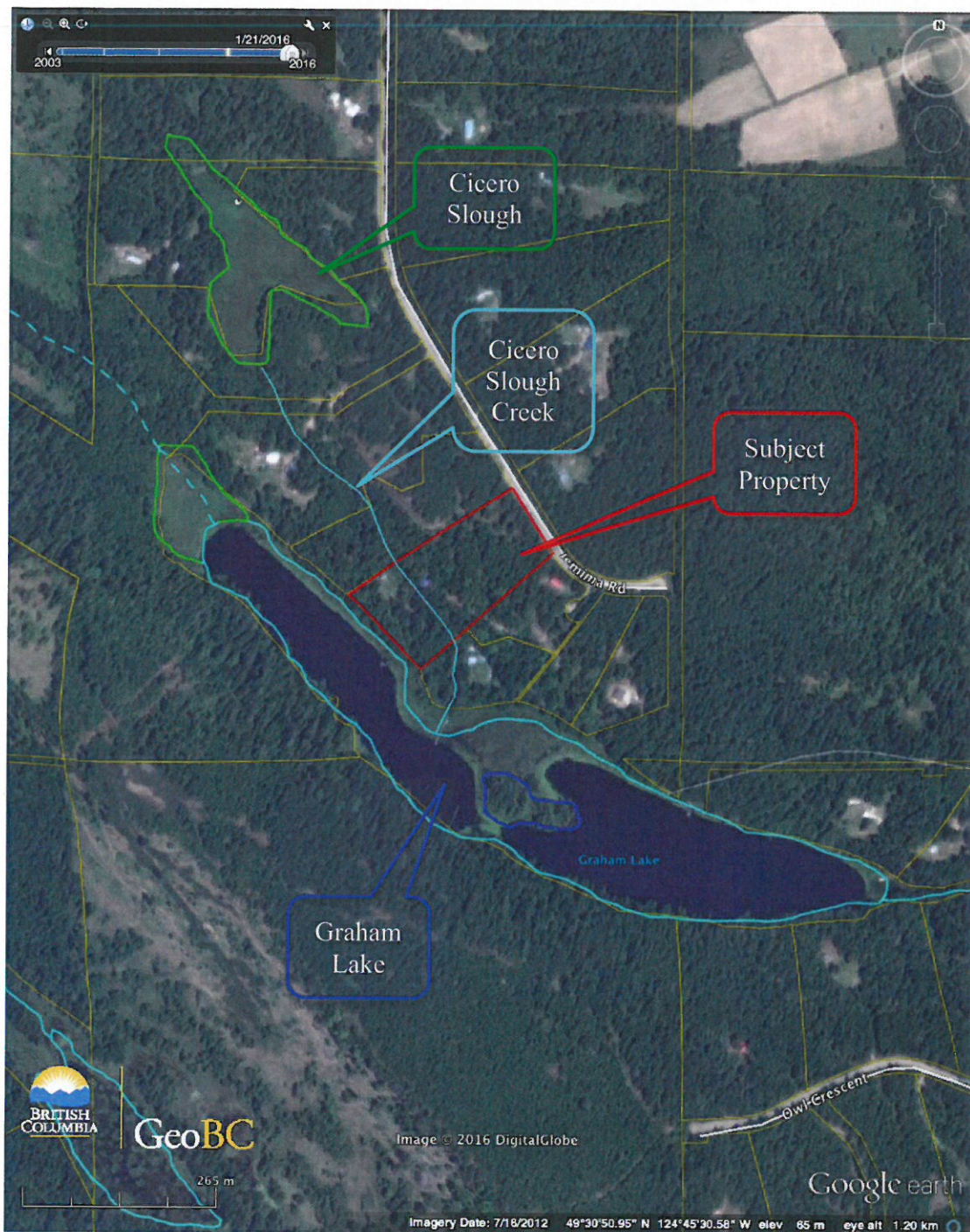


Figure 3: Aerial photo map of Graham Lake, Cicero Slough, Cicero Slough Creek and the subject property at 3131 Jemima Road (outlined in red) showing the configuration of the aquatic landscape features. Image source: GoogleEarth.



Figure 4: Aerial photograph of the subject property (outlined in red) showing the current site configuration. Image source: Map Islands Trust (MapIT).

Observations of Stream Channels and Vegetation

Graham Lake

Graham Lake has a surface area of approximately 15.4ha and an estimated catchment area of approximately 1km². It is used as a domestic water supply for the Graham Lake Improvement District (Koers & Associates, 2009). The lake is characterized by two depressions linked together by a shallow wetland area. Graham Lake has a thick wetland fringe around the perimeter, particularly on the north bank, which contains a significant amount of large woody debris and supports emergent plants. Where Cicero Slough Creek flows into Graham Lake (on the adjacent property to the east) it forms a delta with multiple stream channels flowing through wetland vegetation. This thick fringe of wetland plants stabilizes the lakeshore and protects the shoreline from potential erosion which could be caused by wind or wave events or overland flow.

Vegetation species present in the riparian area of Graham Lake include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*), black hawthorn (*Crataegus douglasii*), willows (*Salix spp.*), hardhack (*Spiraea douglasii*), salmonberry (*Rubus spectabilis*), baldhip rose (*Rosa gymnocarpa*), sedges (*Carex spp.*), rushes (*Juncus spp.*), bracken fern (*Pteridium aquilinum*), salal (*Gaultheria shallon*) and cattail (*Typha latifolia*).

The High Water Mark of the lake was identified by the assessment team to establish the 30m Riparian Assessment Area (RAA) and 15m Streamside Protection and Enhancement Area (SPEA), under the provincial RAR. It should be noted, that no new development is proposed within the 30m RAA or the 15m SPEA for Graham Lake. There are some existing footpaths present within the RAA, located on old logging roads, and a small dock which will be retained. Graham Lake has been included in this detailed RAR assessment for completeness and as a guide to potential future development on the site.

The area of land between the proposed development and the shoreline of Graham Lake is well vegetated with a regenerating stand of second (or third) growth conifers and a well-developed shrub understory. This area provides a good vegetated buffer between proposed development activities which will utilize an existing disturbed area which lies a minimum of 40m from the lakeshore.

The SPEA for Graham Lake is 15m. Additionally there is a covenant on the property (Covenant K114311) that prescribes no buildings to be sited within 7.5m and no disturbance of vegetation within 7.0m of the natural boundary of Graham Lake. Both of these setbacks will be exceeded, as there is no development or disturbance of vegetation proposed within 40m of Graham Lake.



Figure 5: North bank of Graham Lake; photograph taken looking southeast at the delta from Cicero Slough Creek.



Figure 6: Shoreline of Graham Lake; photograph taken from the subject property looking west across the lake. Note the woody debris and fringe of emergent vegetation around the lake perimeter.



Figure 7: Shoreline of Graham Lake; photograph taken looking north along the shoreline of the subject property. Note the woody debris and fringe of emergent vegetation around the lake perimeter. Also of note, on the day of assessment, the lake had a moderate degree of turbidity following a period of heavy rainfall.



Figure 8: An existing lakefront path has been established along an old logging road and parallels the shoreline of Graham Lake.



Figure 9: Existing footpath from the home/garden to Graham Lake (southeast path). This is one of two existing footpaths from the development to the lake. All of the existing footpaths have been established on old logging roads.

Cicero Slough Creek

Cicero Slough Creek is a significant tributary to Graham Lake. The headwaters of this stream are Cicero Slough, a large wetland located northwest of the subject property. Historically, Cicero Slough was dredged to enable its use as a storage reservoir for a large water license (Koers & Associates, 2009).

Cicero Slough Creek flows southeast through the subject property in a ravine and flows into Graham Lake on the adjacent property to the east. No barriers to the upstream migration of fish were observed. Characteristic of most of the streams on Denman Island, Cicero Slough normally lacks surface flow for at least a five-month period between June to October. At the time of the field assessment (January 2016), the creek was flowing with a significant volume and velocity – See photographs below.

Cicero Slough Creek is a steep and deeply entrenched channel flowing through glacial till. Streambed materials are primarily gravel with lesser amounts of boulders, cobble, and sand; a few areas of exposed bedrock were observed. This reach is a cascading channel with step pools supported by large woody debris and boulders.

The banks of the stream channel contain several veteran stumps, logged with springboards and fire-scarred from a forest fire which occurred after the logging. It is likely that stream downcutting was accelerated by logging activities, creating the deep ravine we see today. Undercut banks were observed in several locations throughout the property suggesting that the stream has reached hardpan or bedrock and is trying to widening itself by eroding and undercutting the banks. Some of the trees on the ravine banks exhibit buttress wood.

Vegetation species present in the riparian area of Cicero Slough Creek include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), red huckleberry (*Vaccinium parvifolium*), common horsetail (*Equisetum arvense*), salal (*Gaultheria shallon*), and red elderberry (*Sambucus racemosa*).

The existing driveway crosses the stream at the approximate mid-point of the property. The stream crossing structure is an old log crib culvert, likely a remnant of logging activities, and appears to be in good condition. Similar log crib culverts are present immediately upstream and downstream of the subject property. The new proposed development will utilize this existing stream crossing; replacement of the structure is not anticipated. Future replacement of the log crib culvert will require a Section 9 Water Sustainability Act permit.

The SPEA for Cicero Slough Creek is 10m. Additionally, there is a covenant on the property (Covenant K114311) that prescribes no buildings to be sited within 15.0m and no disturbance of vegetation within 6.1m of Cicero Slough Creek. Both of these setbacks will be achieved, as there is no new development or disturbance of vegetation proposed within 15.0m of Cicero Slough Creek.



Figure 10: Cicero Slough Creek near the downstream (southeast) property boundary. Photograph taken looking upstream shows some undercutting of the streambank.



Figure 11: Photograph looking upstream at Cicero Slough Creek shows the shape of the ravine near the downstream (southeast) property boundary.



Figure 12: Large wood debris present in Cicero Slough Creek is dominated by old veteran logs which are almost rotted out; remnants of the historical logging activities.



Figure 13: Photograph of Cicero Slough Creek looking downstream from the driveway crossing. This portion of the reach has the lowest stream gradient. Note the size of the veteran stump compared to the existing trees.

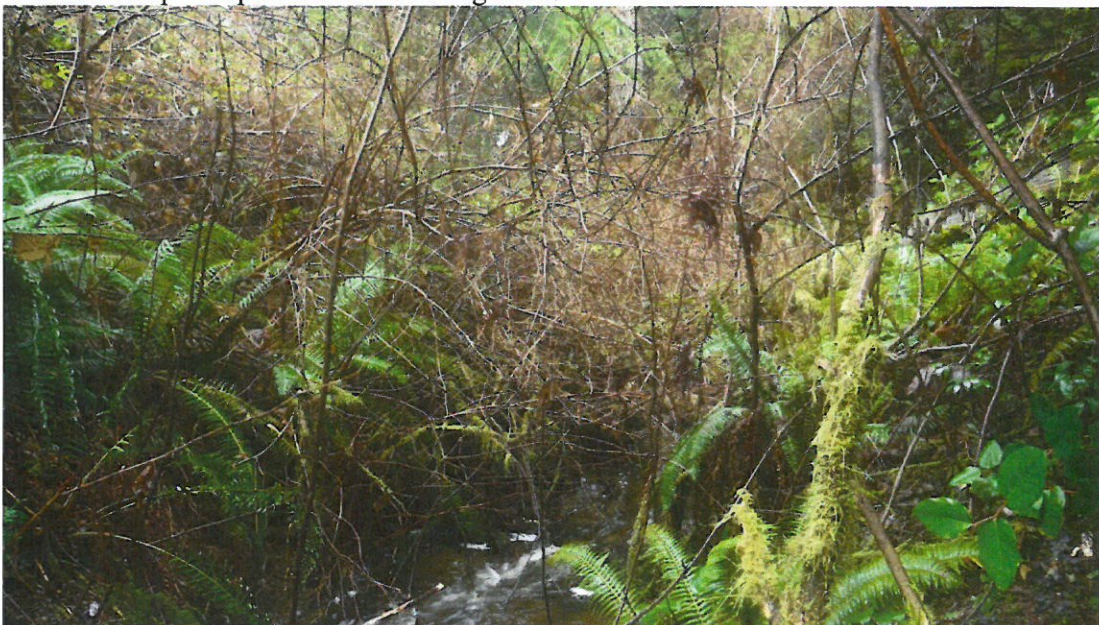


Figure 14: Upstream of the driveway crossing, adjacent to the existing garden, the tree canopy is more open and results in a dense community of understory shrubs in Cicero Slough Creek.



Figure 15: Photograph looking downstream at Cicero Slough Creek showing the shape of the ravine near the upstream (northwest) property boundary. The stream is down cutting and is entrenched near the upstream property boundary.

3. Recommendations

Measures - Protection of the Riparian Retention Area and Encroachment

Trees and understory vegetation in the stream ravine for Cicero Slough Creek and the SPEA for Graham Lake are a riparian retention area and must be protected.

No development is proposed within the stream ravine or within 40m of Graham Lake, so disturbance is not anticipated. This will be accomplished by ensuring that the edge of these protected areas is well-marked to ensure that personnel and equipment do not encroach into this area or (i.e., no development of any form shall be permitted within the ravine and no residential development shall be permitted beyond the existing edge of disturbance upslope of Graham Lake). Particular attention should be paid to the layout of any paved areas, such as roads and driveways, to ensure that all runoff is prevented from causing harm, damage, or destruction to any vegetation within the stream ravine.

Encroachment refers to the problem of disturbance of the riparian vegetation in the SPEA by trampling, unsanctioned trails and dumping of yard waste, etc.

- During construction activities, the Top of Ravine Bank must be marked through the use of temporary orange snow fencing and signage (on both banks). Additionally, temporary fencing must also be erected along the existing edge of disturbance upslope of Graham Lake to prevent encroachment into these protected areas.
- Temporary orange snow fencing demarcating the edge of protected areas must be implemented prior to ANY works on the site, including tree removal, grubbing, clearing, or the storage of any construction related materials, including heavy equipment.

Measures - Danger Trees in the SPEA

The majority of this property has been historically logged, likely multiple times since the early 1900's. The riparian areas along Graham Lake and the ravine slopes along Cicero Slough Creek were completely logged when the original timber was extracted. The site is currently regenerating with a maturing second (or third) growth stand of trees dominated by conifers. The majority of trees on the property are quite young, with a few more mature trees interspersed.

The stream corridor contains many mature trees which are large enough to strike the existing and proposed development. Generally speaking, trees in the riparian area appear to be in good health. However, during the field assessment of Cicero Slough Creek, it was noted that there is one large western hemlock (*Tsuga heterophylla*) that has been undermined by the stream and leans towards the existing house. Trees in the SPEA that are part of a riparian retention area can only be removed or modified if they are deemed Danger Trees by a qualified professional.

- All trees within striking distance of the proposed development must be assessed by an arborist, who is a certified danger tree assessor, to evaluate their condition and prescribe any mitigation measures.



Figure 16: Large western hemlock tree located near the existing house has been undermined by Cicero Slough Creek (yellow arrow) and is a likely Danger Tree.



Figure 17: Large western hemlock tree located near the existing house has been undermined by Cicero Slough Creek (yellow arrow) and is a likely Danger Tree.



Figure 18: Large western hemlock tree (yellow arrow) that has been undermined by Cicero Slough Creek (yellow arrow) leans towards the existing house (red polygon).



Figure 19: Large western hemlock tree (yellow arrow) that has been undermined by Cicero Slough Creek and leans towards the existing house.

All of the proposed development will be undertaken in existing cleared/disturbed areas, so disturbance of trees is not anticipated. Trees within the Cicero Slough Creek ravine or SPEA must be protected, including root zones which may extend beyond the edge of the SPEA/ravine.

- In areas where construction will be conducted near the top of ravine bank, an arborist must be retained to assess the health and protection needs of the trees in and immediately adjacent to the SPEA.

In the event that any trees are considered hazardous, they can be managed so as to maximize their benefit to aquatic and terrestrial ecosystems, while minimizing their risk to people and property.

If trees need to be removed:

- Where ever possible, some of the trees should be left to decompose on site, especially in the SPEA to provide woody debris on the ground as small mammal and amphibian habitat and to provide a substrate for mosses.

Management options to be considered for Hazard Trees include:

- Topping and/or pruning, to prevent dead branches from falling on people or property;
- Where necessary, cutting most of the tree down, while leaving a large section of trunk still standing as a wildlife tree, to provide habitat/food;
- Pushing a tree over and into the stream and/or SPEA, preferably with its root wad intact, so as to augment the supply of large wood. The root wad helps anchor the tree against the bank and provides micro-sites for terrestrial wildlife among the roots and in the depression.

Measures - Windthrow

Windthrow (trees knocked over due to wind) can be a risk to people and property, and if excessive, can result in a loss of function of riparian vegetation in the SPEA. Windthrow is especially a risk where the adjacent forest has been cleared, leaving the remaining trees more vulnerable.

Clearing of this site occurred historically and the proposed development will be undertaken entirely in existing cleared areas, so it is not anticipated that any additional windthrow will occur *ie.* the forest edge has had a chance to stabilize.

Some tree mortality is expected in functional ecosystems, and isolated cases are not necessarily a cause for concern. Fallen trees should therefore not be removed from the site unless they present a safety risk.

Possible strategies to prevent windthrow include:

- Protecting root zones of large trees from compaction;
- “Feathering” or topping adjacent trees to provide a gradual slope for wind to pass over.

Protecting root zones, particularly of large trees with stabilizing root zones located in the stream ravine, will require protected zones sized according to the rule of thumb that each inch of trunk diameter at breast height (DBH) requires a protected root zone with a radius of one foot (*e.g.* a tree with a 24-inch DBH would require a circular protected zone with a radius of 24 feet). An arborist will be able to determine when and where such zones are required.

- As the proposed development of the house, septic and outbuildings will be undertaken in an existing disturbed area, changes to the windthrow patterns in the SPEA are not anticipated. Therefore no further measures are required with respect to windthrow.
- If development plans change such that tree clearing is proposed adjacent to the SPEA, an arborist should be retained to assess the health and windthrow protection needs of the trees in and immediately adjacent to the SPEA.

Measures - Septic

The existing septic system needs to be upgraded and a new septic field will be installed as part of the property redevelopment. The stream has a recommended 30m septic setback and Graham Lake has a recommended 60m septic setback. It is worth noting that these two setbacks overlap, leaving no practical location on the property for the septic field. Given these constraints, the development team has carefully reviewed site conditions on the ground to identify the best location for the septic field to maximize treatment for the protection of human and ecological health.

The proposed location for the septic field is in an existing cleared area at the top of ravine bank on the south side of Cicero Slough Creek. Utilizing the disturbed area will keep new vegetation disturbance to a minimum. The proposed septic field location lies about 20m away from the stream; it is outside of the ravine, SPEA and Covenant Area. The topography of the proposed septic field location slopes towards Graham Lake. The area between the septic field location and Graham Lake is completely vegetated with a moderate slope. There is an existing footpath on the lower slope, but it lies at least 30m away of the septic field location. The intact vegetation and soils will provide treatment to the effluent before it reaches Graham Lake. **No ecological impacts are anticipated from the proposed septic field location.**

- The vegetation that lies between the proposed septic field location and Graham Lake must be left intact.

Measures - Slope Stability

No development or disturbance of vegetation within the Cicero Slough Creek ravine is anticipated. Though there is some bank erosion and undercutting occurring within the stream channel, an abundance of moss on rocks and wood in the stream suggests that it is relatively stable. No obvious slumps or failures were observed.

- No specific recommendations regarding slope stability of the Cicero Slough Creek ravine or SPEA are necessary.

General recommendations for slope stability include:

- No new trails should be constructed on or near steep slopes.
- No stormwater will be directed onto any steep slopes, particularly channelized, concentrated flows.
- Stormwater will be infiltrated at the source and/or directed to a suitable detention/treatment facility and discharged as sheet flow onto vegetated areas.
- Education should be carried out to ensure that residents do not dump yard waste or other refuse onto steep slopes.

Measures - Sediment and Erosion Control During Construction/Pollution Prevention Plan

The developer is responsible for designing an effective erosion and sediment control plan to ensure that during construction, no sediment-laden water enters Cicero Slough Creek or Graham Lake, and that erosion of exposed soils does not occur such that the riparian area is damaged. These receiving environments are both fish habitat and Graham Lake is also a public drinking water supply. **Therefore, there is zero tolerance for turbid or sediment-laden runoff entering these environments. The RAR also prohibits treatment, including infiltration, of stormwater within the SPEAs for Cicero Slough Creek and Graham Lake.**

The Federal Fisheries Act prohibits the deposition of a deleterious substance (including sediment) in water frequented by fish. Furthermore, any stormwater discharges into adjacent downstream receiving environments (especially freshwater ecosystems) must ensure that the Federal and Provincial water quality Guidelines for the protection of aquatic life are not exceeded in the receiving environments. The Federal Guidelines are administered by the Canadian Council of Ministers of the Environment (CCME) and Provincial Guidelines are administered by the B.C. Ministry of Environment (BC MoE). In order to comply with the Act and Guidelines, it is essential that any Erosion and Sediment Control Plan be designed to an adequate standard.

Three documents that outline general principles and approaches for managing stormwater and controlling sediment and erosion are:

- “Stormwater Planning: a Guidebook for British Columbia,” produced by BC MoE (2002);
- “Land Development Guidelines for the Protection of Aquatic Habitat,” produced by DFO (1992); and
- “Storm water management for industrial activities: developing pollution prevention plans and best management practices,” produced by the U.S. Environmental Protection Agency (1992).

The EPA (1992) document has been found to be the most stringent in its standards and best management practices (BMPs), which meet and exceed provincial BMPs and guidelines. The principal requirement of the US EPA method is the development of a Stormwater Pollution Prevention Plan (SPPP or PPP), which must be implemented prior to commencement of any on-site construction activity. Guidelines for the implementation of a Pollution Prevention Plan are outlined below:

- If possible, avoid scheduling construction activities during the winter months when heavy rains are more frequent. This will significantly reduce erosion and sediment control risks.
- Always maintain a clean and organized work area.
- Stage work to minimize the disturbed area and duration of exposure.
- Ensure that existing site services (e.g. water, sewer and gas connections) are properly capped and any drainage is directed away from the creek and exposed soils.
- Ensure that debris from demolition is properly contained and that debris does not enter the creek.

- Silt fences should be used to prevent sediment laden water from entering riparian areas. Silt fences are useful for slowing, diverting and preventing runoff from entering a watercourse, it is not appropriate to use silt fences to try and filter flowing turbid water.
- Prevent upslope water from running over disturbed areas, using diversion berms or other methods to intercept flows.
- Wherever possible, preserve vegetation and cover soils. Stabilize disturbed areas as quickly as possible with temporary or permanent covers (*e.g.* straw/mulch, grass seed, tarp *etc.*).
- Ensure runoff velocities are maintained at the lowest practical value. Maintain sheet flow and avoid channelizing runoff.
- Use site-specific sediment control structures to ensure suspended solids are retained on-site wherever possible.
- Avoid the siting of soil and debris stockpiles near the top of the ravine bank.
- Prepare for and clean up any and all spills. Repair all equipment oil and fuel leaks. A Spill Cleanup Kit should be included as part of the heavy equipment operators' Standard Operating Procedures; all equipment operators should be properly trained in the use of the Spill Cleanup Kits.
- Take care when using concrete and ensure that fresh concrete and concrete wash water do not runoff into the stream or lake. Un-cured concrete and concrete wash water is extremely toxic to aquatic organisms.
- Avoid the unnecessary use of water for cleaning to minimize the subsequent need for treatment of suspended solids.
- Ensure the regular inspection and monitoring of sediment control structures (*e.g.* silt fences, settling ponds *etc.*) as part of the construction program, particularly after rainstorm events. Remove sediment build-up to ensure continued effectiveness.

Measures - Stormwater Management

Care should be taken when designing the stormwater management measures to ensure there are no deleterious effects to the Cicero Slough Creek or Graham Lake (quality or quantity of water). Stormwater flows off the site **MUST** be treated, and detained, prior to entering Cicero Slough Creek or Graham Lake and flows must be discharged into the stream in a manner that prevents channelization and erosive forces. These receiving environments are both fish habitat and Graham Lake is also a **public drinking water supply**. Therefore, there is zero tolerance for untreated runoff entering these environments.

- A stormwater management strategy must be considered and implemented prior to any construction beginning on the dwelling and/or any out buildings, septic or driveway.

Stormwater management systems can simultaneously deliver benefits to the development and to the function of surrounding ecosystems. If implemented as part of a whole-system approach, these benefits can often be accomplished along with savings in development costs.

Recommended principles of stormwater management include:

- Using the Water Balance Model to predict and minimize development impacts on the hydrology of the site.
- Planning the layout to maximize vegetated landscapes, to maintain and/or enhance wildlife habitat, and to minimize impervious surfaces and the generation of point source stormwater runoff.
- Increasing infiltration of rainwater into the ground and minimizing stormwater runoff, by limiting impervious surfaces, using permeable hard surfaces such as permeable pavers, pervious concrete, etc., and using technologies such as infiltration trenches, vegetated swales, and cisterns for rainwater collection/reuse.
- Retaining and replanting native vegetation in order to simultaneously increase wildlife habitat, prevent erosion, and create greenways.
- Ensuring that no water is discharged or infiltrated such that it would destabilize steep slopes, stream banks or cause sedimentation of riparian areas.
- Avoid channelizing flows and discharge runoff as sheet-flow to mimic pre-development conditions whenever possible.
- Select roof membrane materials that are appropriate and do not leach pollutants and toxins, roof runoff does not require treatment prior to discharge into the ground or stream. However, if discharging to the stream, roof runoff will require some type of energy dissipation/detention to prevent erosive damage.

Measures - Environmental Monitoring During Construction

According to the U.S. EPA, **“the most environmentally dangerous period of development is the initial construction phase when land is cleared of vegetation and graded to create a proper surface for construction”**.

The site should be inspected/monitored regularly to ensure that no erosion or sedimentation is occurring and that the riparian zone and water quality of the streams are protected. The use of repeat photography is a simple method for documenting site conditions and should be a core component of the environmental monitoring program – this method is called Photopoint Monitoring.

Photopoint Monitoring is a standardized procedure, developed largely by Dr. Fred Hall of the U.S. Forest Service, for taking precisely replicable photographs of resources that require long-term management (Hall, 2001). Photopoint Monitoring is both a qualitative and quantitative tool that can assist in detecting unacceptable conditions in target resources *before* severe or irreversible changes occur, and *allow time* to implement corrective actions.

Monitoring Recommendations:

- Prior to demolition or any new construction (*i.e.* prior to site disturbance), key locations on the site for monitoring photographs should be chosen. These should be locations which will not be disturbed by the development activities and enable photography of key site features (*e.g.* view of water quality in Cicero Slough Creek upstream of development activities and downstream of activity). These locations should be used as Photopoint monitoring locations where regular

photographs will be taken (camera locations).

- Photos should be time and date stamped and stored in a central location for future reference if requested.
- During construction, the site should be inspected on a weekly basis and after every significant rainstorm (10mm or greater). Repeat photos should be taken at each camera location as well as candid photos showing activities of interest and the general condition of the site.

The intent with environmental monitoring is to document changes to the landscape and that any such changes to the landscape have not resulted in harm to the ecology of the site or watershed.

References

- B.C. Ministry of Environment. EcoCat: The Ecological Reports Catalogue. Keyword Query for Graham Lake. Performed February 5, 2016. URL: <http://a100.gov.bc.ca/pub/acat/public/search.do>
- B.C. Ministry of Environment. Fisheries Information Summary System (FISS). Fisheries Inventory Data Queries. Single Waterbody Query: Waterbody Summary Information. Fish Presence Report. Data Query performed for Graham lake; February 5, 2016.
- B.C. Ministry of Environment. 2002. Stormwater Planning: a Guidebook for British Columbia. <http://www.env.gov.bc.ca/epd/epdpmpp/stormwater/stormwater.html>
- Department of Fisheries and Oceans Canada. 1992. Land Development Guidelines for the Protection of Aquatic Habitat.
- Hall, F.C., 2001. Ground-based photographic monitoring. Gen. Tech. Rep. PNW-GTR-503. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 340 p. <http://www.fs.fed.us/pnw/pubs/gtr503/>
- Koers & Associates Engineering Ltd. 2009. Denman Island Water Local Service Area Graham Lake Source Study. Prepared for the Comox Valley Regional District. Courtenay, BC. 64pp.
- RIPARIAN AREA MANAGEMENT TR-1737-15, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas; Don Prichard, John Anderson, Cindy Correll, Jim Fogg, Karl Gebhardt, Russ Krapf, Steve Leonard, Brenda Mitchell, and Janice Staats. 1998. U.S. Department of the Interior, Bureau of Land Management, National Applied Resource Sciences Center, P.O. Box 25047, Denver, CO 80225-0047 (BLM/RS/ST-98/001+1737)
- United States Environmental Protection Agency (EPA). 1992. Storm water management for industrial activities: developing pollution prevention plans and best management practices. EPA-833-R-92-005.

4. Appendix A: RAR Assessment Forms

Riparian Areas Regulation: Assessment Report

Please refer to submission instructions and assessment report guidelines when completing this report.

Date January 28, 2016

I. Primary QEP Information

First Name	William	Middle Name	Patrick
Last Name	Lucey		
Designation	R.P. Bio	Company:	Aqua-Tex Scientific Consulting Ltd.
Registration #	1467	Email:	aqua-tex@islandnet.com
Address	201- 3690 Shelbourne Street		
City	Victoria	Postal/Zip	V8P 4H2
Prov/state	BC	Country	Canada
		Phone #	250-598-0266

II. Secondary QEP Information (use Form 2 for other QEPs)

First Name		Middle Name	
Last Name			
Designation		Company:	
Registration #		Email:	
Address			
City		Postal/Zip	
Prov/state		Country	
		Phone #	

III. Developer Information

First Name	Ryan	Middle Name	
Last Name	Macleod		
Company	Citizen Design Build Inc.		
Phone #	250-590-3960	Email:	serrah@citizenbuilding.ca
Address	2785 Murray Drive		
City	Victoria	Postal/Zip	V9A 2S4
Prov/state	BC	Country	Canada

IV. Development Information

Development Type	Recreational		
Area of Development (ha)	0.50	Riparian Length (m)	132
Lot Area (ha)	3.15	Nature of Development	Re-development
Proposed Start Date	February 2016	Proposed End Date	February 2018

V. Location of Proposed Development

Street Address (or nearest town)	3131 Jemima Road		
Local Government	Islands Trust	City	Denman Island
Stream Name	Cicero Slough Creek & Graham Lake		
Legal Description (PID)	000-980-820	Region	1 Vancouver Island
Stream/River Type	Stream & Lake	DFO Area	14 Oyster River, Parksville
Watershed Code	905-124500-86600 (Graham Lake)		
Latitude	49°	30'	52.3"
Longitude	124°	45'	35.0"

Completion of Database Information includes the Form 2 for the Additional QEPs, if needed.
Insert that form immediately after this page.

Results of Riparian Assessment (SPEA width)

Cicero Slough Creek

Refer to Chapter 3 of Assessment Methodology

Date: 16-Jan-28

Description of Water bodies involved (number, type)

Stream

Stream	X
Wetland	
Lake	
Ditch	

Number of reaches 1

Reach # 1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

	Channel Width(m)	Gradient (%)	
starting point	1.9		I, Wm. Patrick Lucey R.P.Bio., hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.
upstream	1.8		
	2.2	12	
	2.3		
	1.8		
	2.2	4	
downstream	2.0	2	
	1.7		
	4.0		
	2.5	9	
	2.0	7	
Total: minus high /low	18.7		
mean	2.1	6.8	
	R/P	C/P	S/P
Channel Type		X	

Site Potential Vegetation Type (SPVT)

	Yes	No	
SPVT Polygons		X	Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes I, Wm. Patrick Lucey R.P.Bio., hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ; c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.
Polygon No:	1		Method employed if other than TR
SPVT Type	LC	SH	TR
			X

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons						
LWD, Bank and Channel Stability ZOS (m)	10m							
Litter fall and insect drop ZOS (m)	10m							
Shade ZOS (m) max	6.3m	South bank	Yes		No	X		
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)							
Ditch Fish Bearing	Yes		No		If non-fish bearing insert no fish bearing status report			
SPEA maximum	10.0m	(For ditch use table3-7)						

Segment No:	2	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)	10m						
Litter fall and insect drop ZOS (m)	10m						
Shade ZOS (m) max	6.3m	South bank	Yes	X	No		
SPEA maximum	10.0m	(For ditch use table3-7)					

Segment No:		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)							
Litter fall and insect drop ZOS (m)							
Shade ZOS (m) max		South bank	Yes		No		
SPEA maximum		(For ditch use table3-7)					

I, Wm. Patrick Lucey R.P.Bio, hereby certify that:

- I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;
- I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
- In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Comments

- This is an un-gazetted (unnamed) stream which flows from Cicero Slough to Graham Lake; it has been labeled Cicero Slough Creek for ease of discussion.
- Stream flowing in a ravine.
- No barriers to the upstream migration of fish were observed.
- Cicero Slough normally lacks surface flow for at least a five-month period between June to October.
- Cicero Slough Creek is a steep and deeply entrenched channel flowing through glacial till; cascading channel with step pools supported by large woody debris and boulders.
- Undercut banks were observed in several locations throughout the property.
- Driveway stream crossing structure is an old log crib culvert.
- Vegetation species present in the riparian area of Cicero Slough Creek include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), red huckleberry (*Vaccinium parvifolium*), common horsetail (*Equisetum arvense*), salal (*Gaultheria shallon*), and red elderberry (*Sambucus racemosa*).

Graham Lake

Refer to Chapter 3 of Assessment Methodology

Date: 16-Jan-28

Description of Water bodies involved (number, type)

Lake

Stream	
Wetland	
Lake	X
Ditch	

Number of reaches

1

Reach #

1

Channel width and slope and Channel Type (use only if water body is a stream or a ditch, and only provide widths if a ditch)

Channel Width(m)		Gradient (%)	
starting point	n/a	I, <u>Wm. Patrick Lucey R.P.Bio.</u> , hereby certify that: e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; f) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ; g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.	
upstream			
downstream			
Total: minus high /low mean	n/a	n/a	
	R/P	C/P	S/P
Channel Type	Lake	Lake	Lake

Site Potential Vegetation Type (SPVT)

	Yes	No
SPVT Polygons		X
Tick yes only if multiple polygons, if No then fill in one set of SPVT data boxes I, <u>Wm. Patrick Lucey R.P.Bio.</u> , hereby certify that: e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; f) I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ; g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.		
Polygon No:	1	
SPVT Type	LC	SH
		TR
		X
Method employed if other than TR		

Zone of Sensitivity (ZOS) and resultant SPEA

Segment No:	1	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)	15						
Litter fall and insect drop ZOS (m)	15						
Shade ZOS (m) max	30	South bank	Yes		No	X	
Ditch	Justification description for classifying as a ditch (manmade, no significant headwaters or springs, seasonal flow)						
Ditch Fish Bearing	Yes		No		If non-fish bearing insert no fish bearing status report		
SPEA maximum	15.0m	(For ditch use table3-7)					

Segment No:	2	If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)							
Litter fall and insect drop ZOS (m)							
Shade ZOS (m) max		South bank	Yes		No		
SPEA maximum		(For ditch use table3-7)					

Segment No:		If two sides of a stream involved, each side is a separate segment. For all water bodies multiple segments occur where there are multiple SPVT polygons					
LWD, Bank and Channel Stability ZOS (m)							
Litter fall and insect drop ZOS (m)							
Shade ZOS (m) max		South bank	Yes		No		
SPEA maximum		(For ditch use table3-7)					

I, Wm. Patrick Lucey R.P.Bio, hereby certify that:

- e) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- f) I am qualified to carry out this part of the assessment of the development proposal made by the developer Ryan Macleod;
- g) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
- h) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Comments

- Graham Lake used as a domestic water supply for the Graham Lake Improvement District.
- Graham Lake has a thick wetland fringe around the perimeter, particularly on the north bank.
- There are some existing footpaths present within the RAA, located on old logging roads, and a small dock which will be retained.
- Land between the proposed development and the shoreline of Graham Lake is well vegetated with a regenerating stand of second (or third) growth conifers and a well-developed shrub understory. This area provides a good vegetated buffer between proposed development activities which will utilize an existing disturbed area which lies a minimum of 40m from the lakeshore.
- Vegetation species present in the riparian area of Graham Lake include: western redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*), black hawthorn (*Crataegus douglasii*), willows (*Salix spp.*), hardhack (*Spiraea douglasii*), salmonberry (*Rubus spectabilis*), baldhip rose (*Rosa gymnocarpa*), sedges (*Carex spp.*), rushes (*Juncus spp.*), bracken fern (*Pteridium aquilinum*), salal (*Gaultheria shallon*) and cattail (*Typha latifolia*).

Measures to Protect and Maintain the SPEA

This section is required for detailed assessments. Attach text or document files, as need, for each element discussed in chapter 1.1.3 of Assessment Methodology. It is suggested that documents be converted to PDF before inserting into the assessment report. Use your "return" button on your keyboard after each line. You must address and sign off each measure. If a specific measure is not being recommended a justification must be provided.

1. Danger Trees	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
2. Windthrow	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
3. Slope Stability	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
4. Protection of Trees	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
5. Encroachment	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
6. Sediment and Erosion Control	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
7. Stormwater Management	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
8. Floodplain Concerns	
I, Wm. Patrick Lucey R.P.Bio, hereby certify that:	
a. I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;	
b. I am qualified to carry out this part of the assessment of the development proposal made by the developer <u>Ryan Macleod</u> ;	
c. I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	

Professional Opinion

Assessment Report Professional Opinion on the Development Proposal's riparian area.

Date March 10, 2016

1. I/We Wm. Patrick Lucey R.P.Bio.

Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)

hereby certify that:

- a) I am/We are qualified environmental professional(s), as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;
- b) I am/We are qualified to carry out the assessment of the proposal made by the developer Ryan Macleod, which proposal is described in section 3 of this Assessment Report (the "development proposal"),
- c) I have/We have carried out an assessment of the development proposal and my/our assessment is set out in this Assessment Report; and
- d) In carrying out my/our assessment of the development proposal, I have/We have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation; AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

- a) ☐ if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, **OR**
(Note: include local government flex letter, DFO Letter of Advice, or description of how DFO local variance protocol is being addressed)
- b) ☒ if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

[NOTE: "qualified environmental professional" means an applied scientist or technologist, acting alone or together with another qualified environmental professional, if

- (a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association,
- (b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal, and
- (c) the individual is acting within that individual's area of expertise.



3060 Lake Road, Denman Island, BC V0R 1T0
Tel : (250) 335-1864 Fax: (250) 335-1846
Email: h2oenv@telus.net

March 8, 2016

H₂O File: 15-81

Citizen Design
2785 Murray Drive
Victoria, BC V9A 2S4

**Re: Wastewater System Setback Reduction Study
3131 Jemima Road, Denman Island**

Introduction

H₂O Environmental Ltd. (H₂O) was retained by you, on behalf of the owners, to complete a limited hydrogeologic investigation of the above referenced site and to design the wastewater system for the new building configuration. H₂O understands that you are increasing the size of the existing house to four bedrooms and constructing a two-bedroom guest cottage.

The existing house and the proposed guest cottage are in an area of the property that is located between an ephemeral stream and Graham Lake. The Islands Trust setback to a wastewater system from Graham Lake is set at 60 metres (m) and from a stream is set at 30 m¹. The property owners needed an investigation as to whether or not a new wastewater system can be safely installed at your site.

A wastewater system is defined in the Sewerage System Regulation² (SSR) as comprising tanks and the associated dispersal field. The area of the site available for a wastewater system is constrained by the topography. There is no feasible location on the site for the wastewater dispersal system that is not less than 60 metres from the lake. The setback reduction will be proposed for 40 metres to Graham Lake versus the 60 metres required by Bylaw 186. The proposed reduction of the setback to the ephemeral stream will be approximately 10 metres.

H₂O has investigated the potential for contamination to the lake and the ephemeral stream which may result from use of the new wastewater system. Figure 1 presents a site plan of the area under study with proposed setbacks. The purpose of this letter is to report the results of the field work and the limited hydrogeologic investigation.

Scope of Work

H₂O's completed the following scope of work for this investigation:

- desk study of area geology and hydrogeology to investigate local subsurface conditions;
- an assessment of the local drainage patterns;

¹ Islands Trust Denman Island Bylaw 186, 2008, Sec.2.3.2

² Public Health Act Sewerage System Regulation, BC Reg. 326/2004 with amendments up to BC Reg. 209/2010



- an investigation of the hydraulic conductivity of the onsite soils using data from onsite permeability tests and soil characterization;
- evaluation of the drainage, geologic and permeability data;
- preparation of this report detailing site work with conclusions and recommendations.

Results of Investigation

Desk Study

The soils for the site are classified as Royston soils.³ They have developed in deep gravelly morainal (glacial) deposits. They vary from gravelly loam to gravelly clay loam and are usually found over glacial till.

The bedrock geology in the area has been mapped⁴ as the DeCourcey Formation of the Nanaimo Group. These rocks are late Cretaceous age (90 to 60 million years old) and consist of coarsely bedded sandstone with interbedded conglomerate.

The BC Water Resources Atlas lists registered wells in BC⁵. No wells were found within a 100 metre radius of the proposed wastewater system.

Aquifer #0740 was identified for the area of the site from the BC Water Resources Atlas.⁶ This is a bedrock aquifer which is approximately 47.7 kilometres² in size and is rated as having a moderate demand, low productivity and high vulnerability. Only local quality concerns and no quantity concerns were noted on the website for this aquifer.

Field Investigation

The existing house, the proposed guest cottage and the proposed wastewater system are located on a portion of the site that artificially grades moderately to the southeast. The larger scale topography in the area of study grades steeply to the southwest, towards Graham Lake. Groundwater flow direction is inferred to be the same, following the topography. Natural overland drainage will also be towards the lake.

The stream is located to the northeast, and is up-gradient of, the proposed location of the wastewater system dispersal field. The stream is highly incised into the topography, with steep sides and narrow width.

Most of the properties around the lake have water licenses to draw water for domestic use from Graham Lake. No wells were identified within 30 metres of the wastewater system.

Two testpits were advanced in the area of the proposed wastewater field. The general soil profile onsite was a thin layer of sod or forest debris, underlain by brown to black gravelly loam to approximately 35 centimetres (cm). Finely fractured sandstone bedrock with some silt was then observed to approximately 55 cm, which was underlain by competent

³ Jungen, J. R. , Ministry of Environment, *Soils of Southern Vancouver Island*, MOE Technical Report 17, 1985

⁴ Ministry of Environment BC Water Resources Atlas www.maps.gov.bc.ca/ess/sv/wrbc

⁵ Ministry of Environment BC Imap www.maps.gov.bc.ca/ess/sv/imapbc

⁶ Website: [//srmapps.gov.bc.ca/apps/wrbc/](http://srmapps.gov.bc.ca/apps/wrbc/)

sandstone bedrock. No groundwater was observed in the testpits. The winter water table elevation was assumed to be approximately 55 cm below grade, on top of the sandstone bedrock.

To measure the *in-situ* permeability of the soils, four permeameter tests were conducted. Auger holes were advanced within the proposed wastewater dispersal field and between the wastewater field and Graham Lake to a maximum depth of 40 cm. Auger holes were advanced to within the inferred depth of infiltration from the proposed wastewater dispersal system.

The permeameter test consists of a calibrated tube filled with water which is inserted into an auger hole allowing the water to escape at a flow rate determined by the ability of the soil to transmit it away from the tube. The water flow out of the tube is measured and a field saturated hydraulic conductivity (K_{fs}) of the soil is calculated from the results. Hydraulic conductivity is the volume of water the soil will transmit over a given period of time and is generally considered to be 2x the K_{fs} .

The fastest calculated field saturated hydraulic conductivity of the soil was on the order of 0.41 metres per day, with a hydraulic conductivity of approximately 0.8 m/day.

Based on the estimated soil hydraulic conductivity of 0.8 m/day, an assumed hydraulic gradient of 0.33 (from measured onsite slope below the dispersal area), and a soil porosity of 25%, the effluent velocity in the soils was calculated using the equation $V = Ki/n$, where K is the hydraulic conductivity, i is the hydraulic gradient and n is estimated porosity of the sandy soils.

The velocity of the effluent in the soils is calculated to be approximately 1.1 metres/day.

Wastewater Systems

A Type 1 wastewater system is only septic tank treated effluent with total suspended solids (TSS) and five-day biochemical demand (BOD_5) on the order of 150-300 parts per million (ppm) and 150-250 ppm, respectively. BOD_5 is a measure of the oxygen use of the microbes within the effluent rated over a period of 5 days. Typically, fecal coliform concentrations from a septic tank range from 10^3 to 10^4 colony forming units (CFU) per 100 millilitres.

Type 2 treatment systems reduce the effluent TSS and BOD_5 to less than 45 ppm. A Type 2 10/10 system reduces the TSS and BOD_5 to 10 ppm.

A Type 3 system requires reduction of the fecal coliforms to less than 400 CFU per 100 milliliters while maintaining the 10 ppm standard for TSS and BOD_5 . For residential systems, this is generally done with tertiary treatment, i.e. – a UV light.

A Type 2 10/10 treatment system has been specified on this site due to the limited depth of permeable soil and the space constraints. Additional engineered sand under the sand mound will create Type 3 effluent on infiltration to native soils.

Preliminary Wastewater System Design

H₂O has designed a passive Type 3 wastewater system for the site. It will consist of a septic tank at the main house and a septic tank at the guest cottage, both of which will flow into a 7,728 litre 3 chamber concrete tank. A Bionest treatment plant will be located in the first two chambers. The Bionest is an aerated suspended media type system where aerobic bacteria cling to suspended media and treat the effluent to a maximum of 10 ppm TSS and 10 ppm BOD₅. The treated effluent will then gravity feed to the third chamber used as a pump chamber where it will be time dosed to the dispersal field. Time dosing eliminates the peaks of water use normally found in demand systems and spreads the dosing of the daily volume of effluent over a period of 24 hours to avoid soil saturation and "short-circuiting" of the effluent. The Bionest system reduces nitrogen by approximately 95% with recirculation of treated effluent back to the septic chamber.

The wastewater dispersal field will be located at the top of the slope to Graham Lake. Additional depth of engineered sand under the dispersal field will lower the fecal coliform to less than 400 CFU⁷ upon entering the native soils.

Pathogen removal has been calculated for the soils in the area between the dispersal field and Graham Lake. These loams will remove 99.99% of the pathogens remaining in the effluent with approximately 1.6 metres of the dispersal field.

The generally accepted concentration of phosphorus in a freshwater system that may result in eutrophication is approximately 0.02 mg/l in the lake water. Typical phosphorus (P) concentrations in raw sewage have been shown to be approximately 7 mg/L⁸. Approximately 20% to 30% removal of P is expected as solids settle in the first tank. This would reduce the P in the tank effluent to about 5 mg/L. Phosphorus removal in unsaturated soils may be up to 99% due to adsorption to soil particle surfaces directly under the infiltration field⁹. The end result of the detention, settling and soil process would result in a P concentration of less than 0.05 mg/L P within 1 metre down-gradient of the infiltration field. As the effluent flows through the remaining 50 metres of soil between the infiltration point and the lake, additional adsorption and plant uptake will occur to reduce the P to levels below 0.02 mg/L.

Discussion

The proposed wastewater system will treat effluent to a much better quality than the existing system. The existing system is 23 years old and is not operating according to design, as reported by an inspection of the system completed in 2014¹⁰.

There is no feasible location on the site in which the setbacks can be maintained from the

⁷ Standridge, Oldstadt, Sonzogni - *Passage of Microorganisms in Septic Tank Effluents Through Mound Sand in a Controlled Laboratory Environment*

⁸ Crites and Tchobanoglous, 1998, *Small and Decentralized Wastewater Management Systems*, Table 4-14

⁹ Document SL349, Soil and Water Science Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. July 2011. M. Lusk, G. Toor and T. Obreza - *Sewage Treatment and Disposal Systems: Phosphorus*

¹⁰ DF Holdings Waste Water Management, *Septic Inspection Report*, October 8, 20145

stream and Graham Lake. As previously noted, the stream is up-gradient of the location of the wastewater disposal field. Pathogen and phosphorus calculations indicate that, even if the effluent were to flow into the area of the stream, those nutrients would be significantly reduced before entering the stream. This makes it very unlikely that the treated effluent will have a negative effect on the stream.

Similarly, as shown above, the reduction of nutrients and pathogens in the effluent moving towards the lake would be significant. The groundwater velocity has been calculated to be approximately 1.1 metre per day. This would indicate that the effluent would be resident in the soils for approximately 36 days before reaching Graham Lake. The generally accepted time for complete polishing of Type 1 effluent in native soils is 14 days.

The phosphorus levels with 2 metres of the wastewater disposal field will be less than 0.05 mg/L, in a properly functioning system. The vegetation downgradient between the dispersal field and the lake should not be disturbed, as this would reduce some of the phosphorus uptake by plants on the slope.

Based on the upgradient location of the stream, the site topography, the inferred effluent flow direction and the proposed treated effluent characteristics, H₂O believes that reducing the setback from the wastewater system from 60 to 40 metres to Graham Lake and from 30 to 15 metres from the stream will not likely cause an environmental or health hazard.

Conclusions

The proposed distances of the new wastewater system to the onsite stream and Graham Lake are less than the setbacks set out in the Sewerage System Standard Practice Manual and Denman Island Bylaw 186. Due to the site topographic constraints, there is no feasible location for the dispersal system on the site where all published setbacks can be maintained.

Based on the following:

- the treatment of effluent to Type 2 10/10 standards with additional depth of sand for Type 3 effluent at the infiltration point;
- up-gradient location of the stream from the wastewater dispersal field and effluent travel direction away from the stream;
- long soil residence time due to the distance to Graham Lake and the effluent velocity in the soil,

H₂O believes that reducing the setback from the wastewater dispersal field to the stream from 30 to 15 metres and the setback to Graham Lake from 60 metres to 40 metres will not likely cause an environmental hazard to the lake or health hazard to any of the lake water users.

The area between the wastewater dispersal field and the lake should remain undisturbed for optimal nitrogen and phosphorus reduction.

Closure

This report has been prepared by H₂O Environmental Ltd. for the property owners, Citizen Design, Islands Trust and Island Health and is intended to provide an assessment of the soils and hydrogeologic conditions in the area of 3131 Jemima Road on Denman Island.

No hydrogeological investigation can wholly eliminate uncertainty regarding the potential for unrecognized conditions in connection with an aquifer or subsurface materials. Performance of this assessment was intended to reduce, but not eliminate, uncertainty regarding the potential impact on the wells from the proposed wastewater system given the limits of the investigation and the reasonable limits of time and cost. No warranty expressed or implied is made.

H₂O appreciates the opportunity to provide our services to you. Please do not hesitate to call if you have any questions or comments concerning this report. Should you require additional services in the future, please contact the undersigned.

Sincerely,

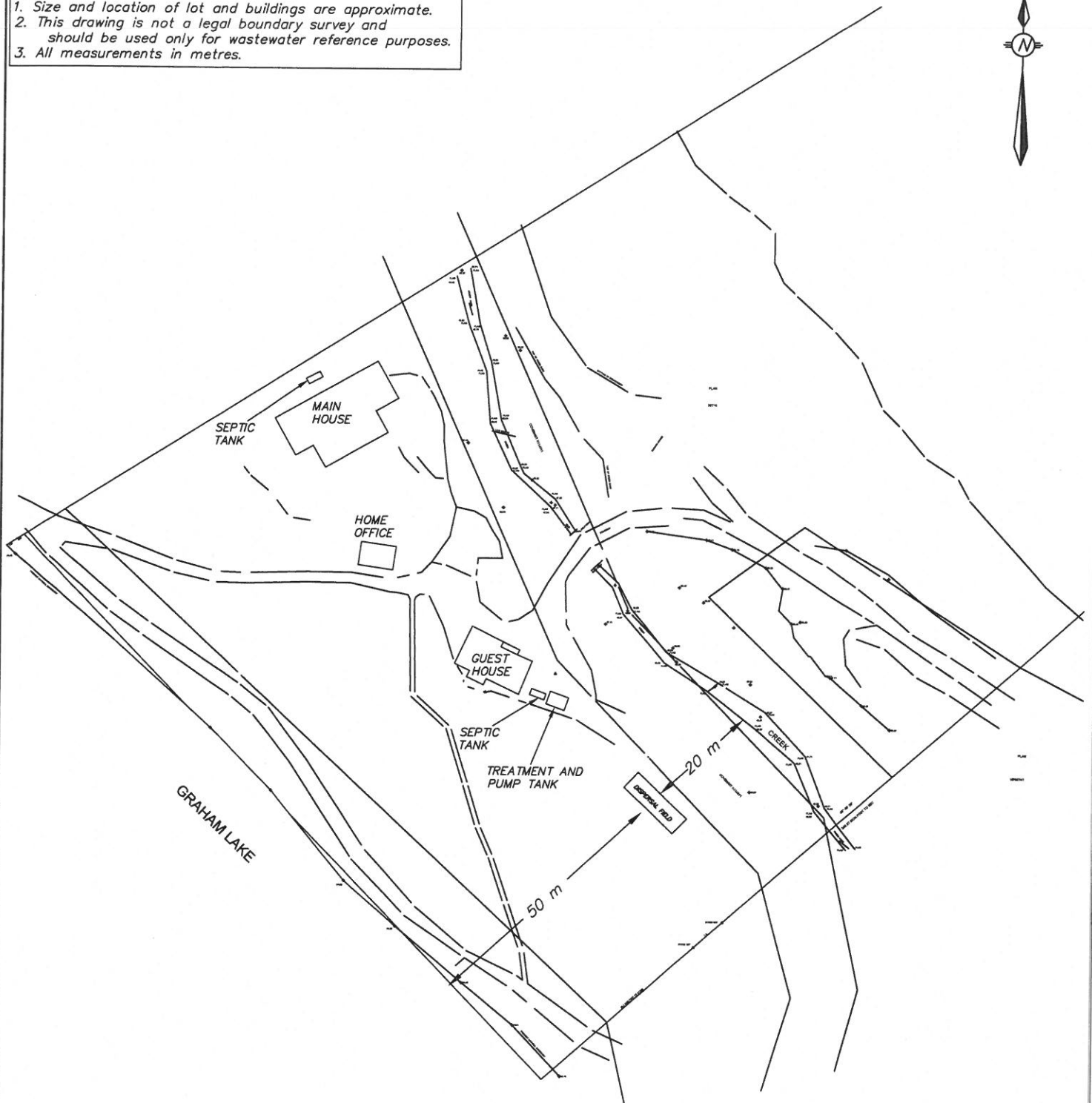
H₂O Environmental Ltd.


Per: _____
Steven M. Carballeira, P.Geo.

Attachments:
Figure 1: Site Plan

NOTES:

1. Size and location of lot and buildings are approximate.
2. This drawing is not a legal boundary survey and should be used only for wastewater reference purposes.
3. All measurements in metres.



BASE DRAWING COURTESY OF PETER MASON SURVEYING

	TITLE: SITE PLAN		DATE: MARCH 10, 2016	FIGURE 1
			DRAWN BY: SMC	
	PROJECT: WASTEWATER SYSTEM SETBACK REDUCTION 3131 JEMIMA ROAD, DENMAN ISLAND		CHECKED BY: SMC	
	CLIENT: CITIZEN DESIGN		SCALE: AS SHOWN	
			PROJECT NO. 15-81	

Temporary Use Permit Application

3131 Jemima Road, Denman Island

Proposal Description

The temporary use application is for the construction of a secondary dwelling on the above R-2 zoned property. Planning requirements, including distance from the primary residence, off road parking stalls available and adequate potable water supply have all been met. The proposed sewage disposal field located down slope from the secondary dwelling has been sized to accommodate both dwellings.

The intended use of the secondary dwelling is for potential accommodation for the owner's relatives currently residing on Denman Island. The main bedroom and bath has been designed with accessibility in mind, so that adaptations can be made easily to suit special needs housing. The guest house can also provide an affordable rental option for a property caretaker. With these housing objectives in mind we believe our proposal is in keeping with the intentions of the official community plan as well as local bylaws.

Potable Water Supply Plan

Existing water license (appended) confirms 1000 gallons/day (3785 litres/day) permitted draw from Graham lake for domestic use in up to two dwelling units on the property.

Required minimum is 1200 litres /day for each permitted residential dwelling unit

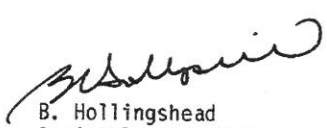
Given area constraints and that the existing supply of potable water exceeds requirements for a secondary dwelling, there is no proposed rain water cistern for the guest house at this time.

THE PROVINCE OF BRITISH COLUMBIA—WATER ACT
CONDITIONAL WATER LICENCE

Dixon Lake Properties c/o Isaac Kramer, R.R. #1, Jemina Road,
Denman Island, B.C., VOR 1T0,

are hereby authorized to divert and use water as follows:

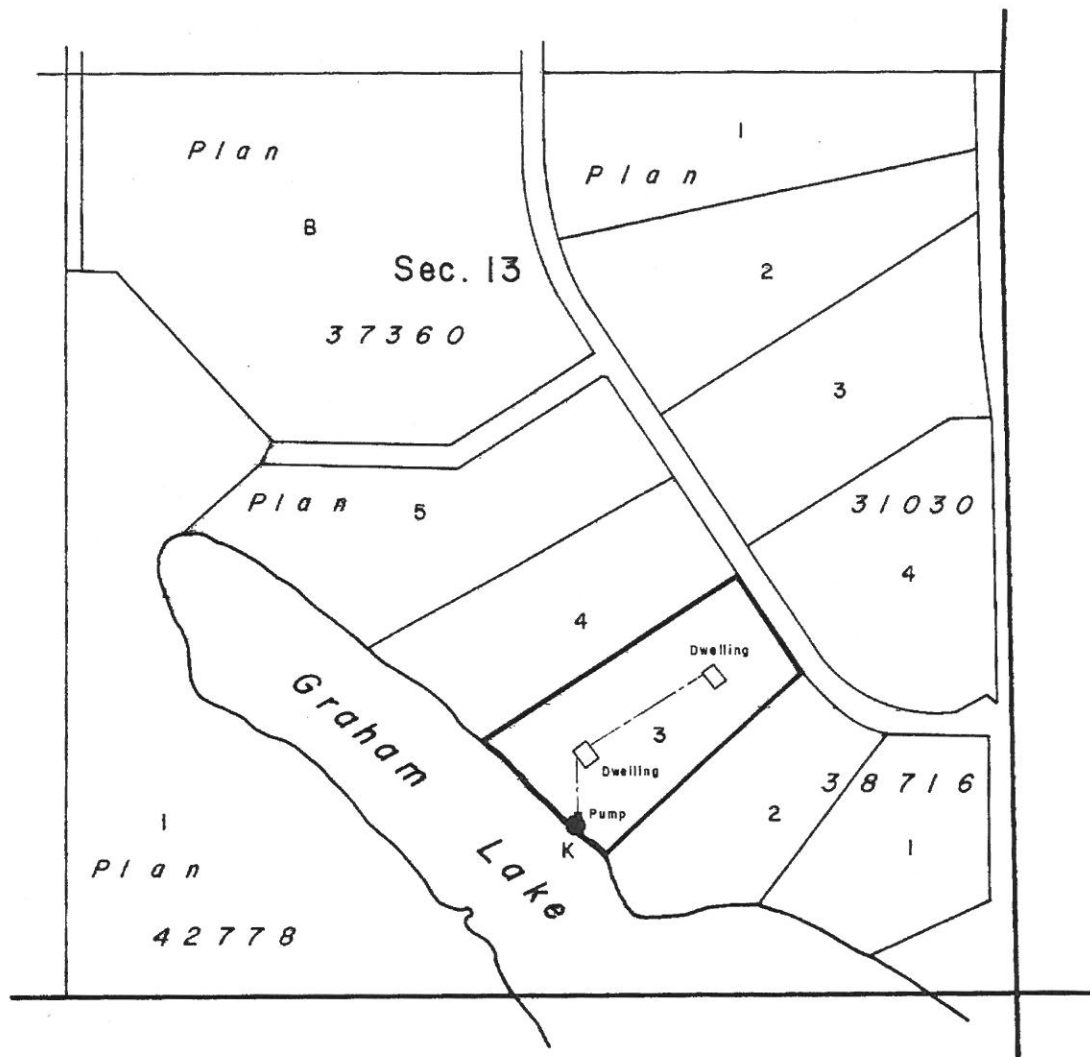
- (a) The source of the water-supply is Graham Lake.
- (b) The point of diversion is located as shown on the attached plan.
- (c) The date from which this licence shall have precedence is 25th April, 1986.
- (d) The purpose for which the water is to be used is domestic.
- (e) The maximum quantity of water which may be diverted is 1,000 gallons a day.
- (f) The period of the year during which the water may be used is the whole year.
- (g) The land upon which the water is to be used and to which this licence is appurtenant is Lot 3 of Section 13, Denman Island, Nanaimo District, Plan 38716.
- (h) The works authorized to be constructed are an intake, pump and pipe, which shall be located approximately as shown on the attached plan.
- (i) The construction of the said works shall be completed and the water beneficially used on or before the 31st day of December, 1990.
- (j) This licence authorizes the use of water for domestic purpose in two dwellings located approximately as shown on the attached plan.


B. Hollingshead
Regional Water Manager

File No. 1000585 Date issued: October 30, 1987 Conditional Licence: 65722



Province of British Columbia



DENMAN ISLAND
Sec. 10

WATER DISTRICT : NANAIMO
PRECINCT : COURTENAY
LAND DISTRICT : NANAIMO

LEGEND

Scale : 1:5000
Point of Diversion : ●
Map Number : WR 92-F-057-1-1
Pipe : ———

Signature: *[Signature]*
Date: October 30, 1987

C.L. 65722
File 1000585

The boundaries of the land to which this licence
is appurtenant are shown thus: ———

Marnie Eggen

Subject: FW: Residential dev. on Graham Lake

From: Simon Palmer [REDACTED]

Sent: Saturday, June 11, 2016 3:42 PM

To: Serrah Hayden

Cc: grahamlakewater@gmail.com; [REDACTED]; [REDACTED] Marnie Eggen; [REDACTED] Simon Palmer

Subject: Re: Residential dev. on Graham Lake

Att: Serrah Hayden,

As previously advised, Graham Lake Improvement District Trustees met yesterday June 10 and examined your planned development adjoining Graham Lake, in particular the proposed reduction in setback of your septic treatment system from the lake from 60 metres as required by Bylaw 186 to 40 metres.

Trustees found approval of the setback proposal incompatible with their responsibility to the 87 households for which Graham Lake is the sole source of drinking water and with the testing of raw lake water and other measures being taken to ensure compliance with VIHA's Surface Water Treatment Objectives.

Simon Palmer - Manager

From: esther muirhead [REDACTED]
Date: June 30, 2016 at 11:18:27 AM PDT
To: denmanislandlocaltrustcommittee@islandstrust.bc.ca, meggen@islandstrust.bc.ca
Subject: Temporary Use PERMIT DE-TUP-2016.1

Please make public my comments about a request to change setbacks from a riparian zone at 3131 Jemima Road, Denman Island.

The owners are asking to decrease the distance from Cicero Slough Creek and Graham Lake from their proposed new septic system.

I am concerned about the integrity of the ecosystem of Graham Lake, which is already under many stressors from human impact.

I suggest that the owners of 3131 Jemima Road examine more environmentally friendly options for reducing and recycling their human fecal matter and gray water outflow. Even the best septic systems are unsustainable, draw energy and are subject to failure in the case of a catastrophe.

Sincerely,

Esther Muirhead

Marnie Eggen

Subject: FW: 3131 Jemima Rd. Denman Island

From: Cherry, Dave [<mailto:Dave.Cherry@viha.ca>]

Sent: Thursday, June 23, 2016 3:01 PM

To: Marnie Eggen

Cc: Cseke, Paul

Subject: 3131 Jemima Rd. Denman Island

Thank you for referring the setback report prepared by H2O Environmental Ltd. I have reviewed the report but I have not conducted a site visit to the property. The report states the location chosen by the lake is the only feasible site for the sewerage system. The report does not provide information on how this determination is made. There appears to be an area at the top of the bank towards Jemima Rd. that is not a designated sensitive area. From my previous visits to properties on Jemima rd. this area is generally suitable for a sewerage systems. My other concern is for a potential increase in phosphorus reaching Graham Lake which could impact lake water quality. I am presently starting a watershed protection plan process with the Graham Lake Improvement District water system to determine the risks to the lake water quality and then develop a plan to mitigate the identified risks. Sewerage systems will be identified as a risk in the plan but at this time strategies to mitigate the risks have not been identified. Islands Trust has taken a previous step to increase setbacks to the lake to assist in its protection. At this time I am unable to recommend a reduction in your setbacks. Please give me a call if you have any questions or require clarification.

David Cherry, CIPHI(C)

Environmental Health Officer

Vancouver Island Health Authority

dave.cherry@viha.ca

phone: 250-331-8518

Fax: 250-331-8596

June 24, 2016

H₂O File: 15-81

Citizen Design
2785 Murray Drive
Victoria, BC V9A 2S4

**Re: Addendum to Wastewater System Setback Reduction Study
3131 Jemima Road, Denman Island**

Introduction

H₂O Environmental Ltd. (H₂O) was retained by you, on behalf of the owners, to complete a limited hydrogeologic investigation of the above referenced site and to design the wastewater system for the new building configuration. Due to the sensitive nature of the site, H₂O prepared a setback reduction report in March of 2016¹ addressing the setback from the wastewater dispersal field to Graham Lake and the unnamed stream that traverses the property.

H₂O has become aware that there are concerns that there are alternate areas where the wastewater system could be sited without necessitating a setback reduction. This addendum addresses those concerns.

Applicable Setbacks and Development Permit Areas

The proposed setbacks in the report from the wastewater dispersal field were 40 metres to Graham Lake and approximately 15 metres to the intermittent stream.

The Ministry of Health setbacks for a wastewater system are 30 metres from a permanent fresh water body and 15 metres from an intermittent fresh water body.

The Islands Trust setback from a wastewater dispersal field to Graham Lake is 60 metres (m) and to a stream is 30 m².

The slope to the northeast of the house and proposed guest house is part of Development Permit Area (DPA) #2 Steep Slopes (Graham Ridge). Denman Land Use Bylaw 185 states that the development permit area is classed as “*environmentally sensitive*” and one of the permit area objectives is to “*protect the natural environment, it’s ecosystems and biological diversity from adverse impacts of land alteration*”.

Alternate Wastewater Disposal

The only other area where wastewater dispersal may be achievable is near Jemima Road, to the northeast. Other areas on the subject site are too steep or closer to Graham Lake. The area near Jemima Road was not initially investigated for

¹ H₂O Environmental Ltd. March 8, 2016 Wastewater System Setback Reduction Study, 3131 Jemima Road, Denman Island

² Islands Trust Denman Island Bylaw 186, 2008, Sec.2.3.2

wastewater due to the necessity of the crossing of the stream and the disturbance of the slopes within the DP area.

Discussion

The existing house and the proposed guest cottage are in an area of the property that is located between an intermittent stream and Graham Lake. The area has been cleared in the past, before the present owners. Construction of the buildings and the wastewater system will predominantly be in this cleared area and will require very little disturbance of the current condition of the site. The owners of the site wish to maintain, as much as possible, the mostly intact nature of the property.

Additionally, the actual location of the wastewater dispersal system is 50 metres from Graham Lake. The site plan prepared from a surveyed drawing included in the original study indicates that there is a 50 metre distance to Graham Lake from the dispersal system. The setback reduction in the previous work was proposed for 40 metres to Graham Lake in an attempt to have only one distance for the buildings and wastewater variance. At the time, it was thought it would be clearer to apply for the variance to one distance versus several different distances for several different purposes.

Pumping effluent across a stream bed is problematic. Leaks do not generally occur in PVC piping but the potential for having a pipe leak due to earth movement or burst due to a number of other conditions such as pump failure or freezing cannot be ignored.

There is no location on the site in which the setbacks can be maintained from the stream and Graham Lake or without disturbing the environmentally sensitive slopes. As previously noted, the stream is up-gradient of the location of the wastewater disposal field.

The passive Type 3 system designed for the site will treat the effluent to a much higher standard than just a septic tank alone, which is what is currently being used at the house. The net effect of the installation of the wastewater system will be improved effluent and better quality groundwater flowing towards Graham Lake from the house.

Summary

The only other area available for wastewater dispersal will require disturbance of sensitive slope areas and crossing of a stream with piping containing effluent. This possibility will also disturb approximately 180 metres of the property to allow the wastewater to be dispersed nearer Jemima Road.

The actual setback reduction from the wastewater dispersal field is from 60 metres to 50 metres to Graham Lake.

The overall effect of the installation of a passive Type 3 wastewater treatment system will cause a significant improvement in the shallow groundwater flowing to Graham Lake from the Type 1 system currently in use.

It is the professional opinion of H₂O that the potential impact from the setback reduction at the currently proposed location of the wastewater dispersal field will be less than the potential environmental impact from pumping effluent across the stream and excavation of a ditch of over 180 metres length crossing the sensitive slopes to the northeast of the house locations.

Closure

This addendum has been prepared by H₂O Environmental Ltd. for the property owners, Citizen Design, Islands Trust and Island Health and is intended to provide additional information for the wastewater system proposed for 3131 Jemima Road on Denman Island. Please do not hesitate to call if you have any questions or comments concerning this report.

Sincerely,

H₂O Environmental Ltd.

Per: 
Steven M. Carballeira, P. Geo.

Application for Variance for Septic setback

3131 Jemima Road

Dear Mr. Cherry,

I'm writing to offer additional information on the above property in order to provide clarity and context for your recommendation regarding a reduction in the required setback for a septic system.

There are two areas on the site where buildings and septic could feasibly be located. Where H2O's report determined the proposed siting as the only feasible location, it was within the context of our proposed development, the sites varying topography and a unique set of planning and environmental restrictions.

The existing clearing is where our proposal is located. It currently has a single family dwelling with a type 1 septic system in need of an upgrade, and is accessed by a driveway through a shared easement. This clearing has the space required for the main residence, accessory structures, parking, vegetable gardens, yard space and is connected to the lakefront by existing footpaths.

The alternative area for development is a forested area adjacent to Jemima road where no services, infrastructure or access lane currently exists. To develop this area would cause significant environmental disturbance which is in contradiction to Island's Trust mandate to "protect the natural environment, its ecosystems and biological diversity from the adverse impacts of land alteration".

The embankment North East of the existing clearing is approximately 19m in elevation at a slope in the 30 degree range, qualifying it as a steep slope DP area.

The slope, as well as the stream opposite the driveway, are both natural barriers that run the full width of the lot, separating the two parts of the property that are being considered .

If you refer to the site plan Islands Trust has mapped several DP areas or sensitive areas on the property, including the majority of the area above the embankment. This further reduces the feasibility of using that part of the lot for any residential development.

While we requested a 40m setback in our application, the plans show 50m clear between dispersal field and the lake front. This was essentially to help simplify the application for a property with a complicated set of restrictions and overlapping setbacks. In effect we are requesting a practical reduction of 10m horizontally while there is to our advantage 14m in vertical distance, of heavily vegetated land mass between the infiltration sand bed and the lake front elevation.

It is our intention in the siting of structures and the septic system to cause minimal environmental impact in terms of energy use, tree removal and land alterations and most importantly to give careful consideration to the Graham lake water supply and its users.

We are informed by Aquatech's Environmental Impact Assessment which concluded that "No ecological impacts are anticipated from the proposed septic field location." The hydrologist report supports the same findings and outlines how the proposed septic system will treat waste to a much higher degree than the existing system. The proposed system has been designed for the specific constraints and sensitivities of this location and makes the most sense in all respects given these unique site considerations.

Sincerely,

Citizen Design Build Inc.
250. 590. 3960

Potential solutions

Our proposal

Type 3 system with additional sand bed above forested area

23m from stream, 50m from lake

- Uses natural topography, where effluent percolates through 50 metres of vegetated soil between the infiltration field and the lake
- Advanced and customized system exceeds what is existing
- No additional energy used to pump effluent up hill
- No significant tree removal on any part of the property- ecosystems remain unharmed
- Qualified biologists and hydrologist support the proposal after extensive field investigations and desk analysis
- Requires a reduction in setbacks

Alternative 1

Locate septic field above embankment

- Tree removal for dispersal field
- Piping effluent uphill to the top of embankment, increased energy use for pump
- Crossing stream with effluent piping poses significant risk, in event of leak or damage effluent could enter the stream topically and be carried to lake.
- Crosses stream SPEA and Steep slope DP area.

It is unlikely this would be approved by planning dept.s given the concern for sensitive environmental areas, making this alternative not viable.

Alternative 2

Locate residential development and septic field above embankment

- Abandon existing house and infrastructure
- Lake water source would need to be extended to reach top of property
- Significant tree removal to accommodate main dwelling, accessory structures, driveway, services and septic field.
- Geotech's site assessment notes bedrock is "very likely to be found at shallow depths on this plateau", making infiltration and percolation less effective here
- Island Trust mapping delineates a tertiary class mature forest area averaging 25m back from the front lot line. As well I.T. mapping extends DP area No.2 (Steep Slope) beyond the top of embankment by approximately 50-55m. Without modification, the usable area of the property is therefor reduced to approximately one eighth the length of the lot with all restrictions in place
- Owners would have to leave the property to access the lakefront by going around neighbours to the shared driveway. This increases traffic, road use and lack of privacy for neighbours.

Marnie Eggen

Subject: FW: 3131 Jemima Rd. Denman Island

From: Cseke, Paul [<mailto:Paul.Cseke@viha.ca>]
Sent: Thursday, June 30, 2016 10:09 AM
To: Marnie Eggen; 'serrah@citizenbuilding.ca'
Cc: Cherry, Dave
Subject: RE: 3131 Jemima Rd. Denman Island

Hi Marnie,

With the additional information presented, we do not support the decision to lower your setback distances from 60 metres. Representing Island Health in this manner is Dave Cherry and myself. We are both Environmental Health Officers, currently working out of the Courtenay Office which covers Denman Island. We encourage stakeholders who are involved with our watersheds to develop plans and rules like your setback distances to ensure long lasting, sustainable, drinking water quality. To make exceptions can create a precedent which could impact more areas than just that specific area of Graham Lake.

We understand the existing house on the subject property has an older septic system and improving this system would definitely be beneficial. However, adding a second dwelling is a different situation. Simply upgrading/expanding the home that is already there and upgrading the sewerage system would be supported by Island Health. The information sent to us has shown that there may other available sites which do not encroach on your setbacks for a second home and system. Your bylaw helps protect the watershed by limiting activities which could negatively impact the water quality. For example preventing additional lake access, construction vehicles, phosphorus, etc.

The report from H2O Environmental LTD states there no ecological impacts are anticipated. Graham Lake has water quality issues due to organics which make drinking water treatment difficult. If you are wanting to lower your setbacks to this vulnerable watershed you need to seriously consider the impact of multiple sewerage systems and not just this case. H2O Environmental is correct and the Ministry of Health setbacks from wastewater dispersal is 30 metres from a fresh water body. That being said, as Public Health representatives, it is difficult to encourage our stakeholders to reduce standards that protect the public and the environment.

Please feel free to contact us if you have any questions.

Thank you,

Paul Cseke C.P.H.I.(C)
Environmental Health Officer
| 355 11th Street | Courtenay | BC | V9Y 1S4 |
| P (250) 331-8518 | F (250) 331-8596 |
| E paul.cseke@viha.ca |
| W www.viha.ca |

Statement of Confidentiality

This message (including attachments) may contain confidential or privileged information intended for a specific individual or organization. If you have received this communication in error, please notify the sender immediately. If you are not the intended recipient, you are not authorized to use, disclose, distribute, copy, print or reply on this email, and should promptly delete this email from your entire computer system.



Marnie Eggen

Subject: FW: Denman island application for plan 38716 PID: 000980820 3131 Jemima road. Attention Marnie or Meggen@islandstrust.bc.ca whomever is overseeing this application.

From: Eileen O'Brien [REDACTED]

Sent: Monday, July 04, 2016 2:05 PM

To: Marnie Eggen

Subject: Denman island application for plan 38716 PID: 000980820 3131 Jemima road. Attention Marnie or Meggen@islandstrust.bc.ca whomever is overseeing this application.

Re variances to raparian bylaws set back from Cycero Creek 15 meters instead of 30 meters and Graham lake. 40 meters instead of 60 meters.

We [REDACTED] are against this application for a variance to current Raparian bylaws. Graham lake and Cycero creek are part of our water shed and we support descions made by the trust for its protection.

Erin O'Brien and Eileen O'Brien owners

Marnie Eggen

Subject: FW: Re Temporary Use Permit DE-TUP-2016 (Lundberg)
Attachments: LTC LETTER RE GRAHAM LK SEPTIC.doc

From: dorrie woodward [REDACTED]
Sent: Sunday, July 03, 2016 11:34 PM
To: Marnie Eggen
Cc: David Critchley; Laura Busheikin; Susan Morrison
Subject: Re Temporary Use Permit DE-TUP-2016 (Lundberg)

Dear Ms Eggen,

Please find attached my comments on Temporary Use Permit DE-TUP 2016, to be discussed at the LTC meeting Tuesday July 5 on Denman Island.

Sincerely,
Dorrie Woodward

TO: Denman Island Local Trust Committee
FROM: Dorrie Woodward
July 3, 2016

Attn.: Marnie Eggen

Re: Response to Temporary Use Permit DE-TUP-2016 – Lundberg

My concerns are that the setbacks for the septic dispersal field do not conform with the RAR, newly adopted by the LTC for Denman Island. From what I can see on the map, called Plan B, included in the Trust package, the septic dispersal field is 49.8m from Graham Lake, instead of 60m in the RAR, and only 23m from Cicero Creek instead of 30m recommended for non-RAR streams. Indeed, as stated on pg 22 of the March 17 2016 Report included in the package: "...these two setbacks overlap, leaving no practical location on the property for the septic field."

In the Criteria for Undue Hardship with respect to the RAR it states: "Situations where application of SPEA still allows for some use of the land even if those uses are unsatisfactory or less economical, the landowner will not be considered to have undue hardship." http://www.rdosmaps.bc.ca/min_bylaws/planning/RAR/DFO_Guide_rarvariances.pdf Perhaps, without the demands of a second dwelling, a smaller septic system can be designed to fit the site.

Further, as stated in the same Report, the ground around the dispersal field slopes towards Graham Lake, which would add to the risk of contamination, should the septic system malfunction.

Further, with current weather changes due to warmer temperatures, Denman Island has experienced severe rainstorms which cause flooding over saturated ground. This has happened with increasing frequency, and can cause septic fields to malfunction. Baynes Sound, which is monitored by Environment Canada for e coli and other bacteria, has had to post shellfish harvesting closures in such circumstances. <http://www.inspection.gc.ca/food/fish-and-seafood/shellfish-sanitation/significant-weather-events/eng/1360781505142/1360781578119>

I see nothing in the H2O report that addresses this well known problem. Nor does it address the concern of longer power outages: in the H2O description the pump has a critical function: it "time doses" the dispersal of the effluent over a twenty four hour period. It may be the dispersal field is not designed to withstand surges. Given that significant weather events and power outages often come together, the pump will be useless.

That the proposed Temporary Use Permit does not conform to the newly adopted RAR and puts Graham Lake and Cicero Creek at risk of contamination would be sufficient, in my view, to turn down this request. That Graham Lake supplies the drinking water for as many as two hundred people makes it essential that this request be refused.

I'm glad to hear that the Graham Lake Improvement District has asked the LTC to reject this request.

The owners need to make their building plans -and hence their septic system - conform to the limitations of the property they bought, rather than ask the community to take on any risk of contamination to their drinking water.

FINAL POINT: This process points to a larger problem of taking care of this lake, which is also a

reservoir, in that we are asked to focus on one lot and one permit at a time, when I believe we should have a comprehensive overview of the whole watershed which supports the Lake. Graham Lake has had a difficult history, which includes the logging and permanent removal of tree cover in the Madigan, the main source of its water, the raising of it level by one foot, which drowned a small island and much marshland, and created a toxic environment for the fish for a long time. Cicero Slough's big beaver dam was removed, causing sudden runoffs and flooding into the lake. More logging, clearing at the Lake's edge and careless road building have added many cuts to the integrity of this Lake and the streams which feed it. Graham Creek was cut off in 1970/71 with rip rap to raise the Lake to supply water to the new subdivision on East Road. No provision for some continual flow was installed. It was then listed as a seasonal creek, though that doesn't fit with the memories of some locals.

My point is this: unless the Trustees and the planners know what has happened to the watershed over the long term, how it is recovering, how it is vulnerable, then there is little context for making good decision on the issue related to individual lots. The decisions are part of a cumulative process, and the Trust must know it's watersheds well in order to preserve and protect them.

Therefore, I request that the LTC make a plan to build such an overview of the watersheds on Denman Island, starting with ones that supply drinking water to the community, so that future decisions about development within the watersheds have the broader ecological context needed to make wise decisions.

Marnie Eggen

Subject: FW: Denman Local Trust Committee re 3131 Jemima Road (Lundberg)

From: J Thornton [REDACTED]

Sent: Sunday, July 03, 2016 4:20 PM

To: Marnie Eggen

Subject: Denman Local Trust Committee re 3131 Jemima Road (Lundberg)

Hello Marnie,

Would you please provide the DILTC my comments with respect to the applications by the new owners of 3131 Jemima Road. I understand they are applying for a Temporary Use permit (DE-TUP-2016.1) for a secondary dwelling, and a Development Variance Permit (DE-DVP-2016.1) to provide for a sewerage system to accomodate both a new main dwelling and a guest house.

[REDACTED]

The subject property currently has a small dwelling suitable for one or two people and the septic system was sized for the house according to the bylaws in force at the time (late 70's?) The new owners wish to enlarge the dwelling to support a growing family. They desire 2 bathrooms in the moderately sized 122 sq.m. house. They also wish to provide accomodation for parents, also understandable, particularly as both families live at some distance from Denman.

When I first read the applications, I did find the reduced size of the drawings made for difficult reading and I had reservations about the septic field setback from the lake, BUT on close examination noted that the actual setback for the septic field is very nearly 50 meters rather than the 40 m in the application, and I also note that the proposed septic treatment system provides a pumped periodic flush to the field which is vastly superior in efficient treatment of the outfall and much less liable to fail than the current gravity fed system which has probably reached the end of its useful life. Our septic field uses the same pumped flush.

I am satisfied that Graham Lake water will not be threatened by reducing the setback from 60 to 40 meters in either the short or long term. Nor am I concerned with the creek setback reduction.

In view of the above, I support both applications without reserve.

Yours truly,

J M Thornton. [REDACTED]

Marnie Eggen

Subject: FW: Temporary Use PERMIT DE-TUP-2016.1

From: esther muirhead [REDACTED]

Sent: Friday, July 01, 2016 3:51 PM

To: David Critchley; Laura Busheikin; Marnie Eggen

Subject: Re: Temporary Use PERMIT DE-TUP-2016.1

I am away on July 5th so thanks for allowing concerns to be aired. I have spoken to many people and given that it is summer holidays and many folks do not read the fine print on websites, there has not been sufficient discussion ahead of the meeting. The few people who did read the impact reports are simply agreeing to let the experts decide.

The notice in the June 23rd Grapevine, stating that this is about a temporary use permit, fails to alert people to the most important request for decreasing setbacks from a riparian zone. I think we need more notice before making these kinds of technical decisions.

For deep democracy,

Esther Muirhead

STAFF REPORT

Date: June 27, 2016

File No.: DE-RZ-2015.1
(Pandesign)

To: Denman Island Local Trust Committee
For the meeting of July 5, 2016

From: Rob Milne, Island Planner

CC: Ann Kjerulf, Regional Planning Manager

Re: **Application to Redesignate and Rezone Lands To Facilitate the Donation of Lands and the Transfer of Density**

Owners: Luise Anne Hermanutz & David James Innes (Donating property)
Applicant: Henning Nielsen
Location: Lot 17, Section 6, Denman Island, Nanaimo District, Plan 6404 (6080 Lacon Road)

Owners: Henning Nielsen (Receiving property)
Applicant: Henning Nielsen
Location: Lot A, Section 12, Denman Island, Nanaimo District, Plan VIP88949 (2100 Crescent Road)

PROBLEM/ISSUE

The purpose of this staff report is to provide a summary of the public hearing held on June 25, 2016 for Denman Island Bylaw Nos. 219 and 220.

BACKGROUND

It is the objective of the applicants to facilitate three outcomes through this application. In the first instance it is the intent of the owners of Lot 17 to transfer approximately 2.545 hectares of land to the Trust Fund Board to be protected as a nature reserve. The remaining outcomes are to transfer one of the two densities associated with the 2.545 hectares to the receiving property owned by PanDesign (Nielsen) and to add one density to the Denman Island Official Community Plan (OCP) density bank.

At the April 19, 2016 regular meeting of the Denman Island Local Trust Committee (LTC) consideration was given to a staff report dated March 16, 2016 which considered the submissions and information received at the previous March 15, 2016 public hearing. Subsequent to that consideration the LTC adopted the following resolutions:

DE-2016-023

that the Denman Island Local Trust Committee Bylaw No. 219, cited as "Denman Island Official Community Plan, 2008, Amendment No. 2, 2015" be amended at second reading by the addition of a new item 1 as follows and the renumbering of subsequent items:

“That the Residential Density Bank table of Appendix D, “Density Banking” be amended by the addition of a new item, in sequential order, which reads as follows:

- Authorizing Bylaw: No. 219
- Date Added to or transferred from the Bank: (date of adoption)
- Legal Description: Lot 17, Section 6, Denman Island, Nanaimo District, Plan 6404 (6080 Lacon Road)
- Number of residential dwelling units added or deleted: +1
- Cumulative Total of residential dwelling units in the bank: 14”

DE-2016-024

that the Denman Island Local Trust Committee Bylaw No. 219, cited as “Denman Island Official Community Plan, 2008, Amendment No. 2, 2015” be read a second time as amended.

DE-2016-025

that the Denman Island Local Trust Committee Bylaw No. 220, cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015” be amended at second reading by the addition of a new item 1 as follows and the renumbering of subsequent items:

“That Table 8 – “Site Specific Regulations” of Part 3.3, “Residential Zoning Tables” be amended by the addition of a new entry in sequential order which reads as follows:

Site Specific Zoning Code: “R2(6)

Site Specific Regulations: 1 Despite line 1 in Table 7 of this Section, the maximum density permitted by subdivision is an average of one lot per 5.56 ha.”

And that renumbered item 2(b) be amended by the deletion of the text which reads:

“from a split zoning of Rural Residential (R2) and Forestry (F) to Rural Residential (R2)”

And inserting the following text:

“from a split zoning of Rural Residential (R2) and Forestry (F) to Rural Residential 2(6), (R2(6))”.

DE-2016-026

that the Denman Island Local Trust Committee Bylaw No. 220, cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015” be read a second time as amended.

DE-2016-027

that the Denman Island Local Trust Committee request staff to schedule a Community Information Meeting for a Saturday afternoon or weekday evening to allow for a community review of the draft bylaws and associated information.

Subsequently, at the May 17, 2016 regular meeting of the LTC, consideration was given to the findings of the May 16, 2016 CIM held to review amended proposed Bylaw Nos. 219 and 220 and the following motion was adopted :

DE-2016-037

that the Denman Island Local Trust Committee schedule a Community Information Meeting and a Public Hearing on Bylaw Nos. 219 and 220 for June 25, 2016 in the afternoon; such Public Hearing is to be proceeded by a Community Information Meeting.

REVIEW AND ANALYSIS

The public hearing held June 25, 2016 was attended by approximately 35 members of the public, although only 17 signed in; and verbal presentations were provided by eight attendees including a representative for the applicants. A total of seven written submission were received (Attachment 1). Of those submissions:

- One stated support for the application;
- One proposed that the OCP policy be amended to ensure that any future density donation remain with the remainder of the donor property but did not state a position on the application;
- One expressed the opinion that whereas, in their view, more speakers spoke negatively about the application, it should be rejected;
- Two submissions supported the density exchange but not to the property that is designated to receive the additional density. They also felt that additional density on that particular property would have impacts upon neighbouring properties;
- One submission suggested that the receiving location be changed due to concerns about traffic increases, impacts upon water and the potential for secondary dwellings; and
- One suggested that all new or expanded properties be required to install a non-potable rainwater harvesting system as part of construction.

The verbal presentations largely mirrored the contents of the written submissions reviewed above both in number and content.

It should be noted that concerns related to the application expressed at this public hearing were significantly fewer in number and narrower in scope than those previously identified at the March 15, 2016 public hearing. The concerns heard at that public hearing also included concerns regarding:

- A lack of transparency associated with the process;
- The loss of lands zoned for "Forestry" and the subsequent loss of wildlife habitat;
- Concerns related to perceived real estate speculation and the transformation of Denman Island into an exclusive gated community through density transfers;
- The need for an environmental review;
- The large number of houses for sale on Denman Island making the need for more housing unnecessary and the proposed bylaws not resulting in more affordable housing;
- The use of densities as a commodity that will lead to financial gain for a few at the expense of the loss of forestry lands and the loss of health and security for neighbours of the receiving property;
- Density transfers should go towards achieving affordable housing only;
- No community benefit from the density swap; and

- There are other R2 lands to transfer the density to.

It should also be noted that at the community information meeting (CIM) held immediately prior to the public hearing it was explained that Bylaw No. 220 would need to be amended to address the failure of the current map to include the balance of the property currently zoned R2 into the proposed R2(6) zoning designation (Attachment 2). No comments were received regarding this proposed amendment which has no effect on use or density and which is supported by the applicant.

SUMMARY

It is the observation of staff that there has been a significant decline in the amount, degree and nature of community concern related to this application since the May 16, 2016 CIM. As well, the focus of the concerns has also narrowed with an emphasis on possible impacts upon adjacent properties or, in at least one case, specific residents of those properties. It is also noted that there was stated support for density exchanges although not to the proposed receiving property.

In the context of the public consultation process for this application and its proposed outcomes it would seem clear that the overall level of community anxiety and the scope of the concerns has demonstrated a clear downward trajectory. Amendments made to the bylaws to address previously expressed concerns and ongoing public consultation has likely played a role in this process.

It is the view of staff that the potential net community benefits which could be obtained by the approval of this application offset the expressed concerns regarding possible impacts upon the adjacent properties recognizing that approval of the application would result in the addition of a single 5.56 ha (13.7 acre) lot in the neighbourhood.

RECOMMENDATIONS

1. That Denman Island Local Trust Committee Bylaw No. 219, cited as "Denman Island Official Community Plan, 2008, Amendment No. 2, 2015", be read a third time.
2. That Denman Island Local Trust Committee Bylaw No. 219, cited as "Denman Island Official Community Plan, 2008, Amendment No. 2, 2015", be forwarded to the Secretary of the Islands Trust for approval by the Executive Committee.
3. That Denman Island Local Trust Committee Bylaw No. 220, cited as "Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015", be amended at second reading by deleting Appendix No. 2 and replacing it with a revised Appendix No. 2 which shows all of the portions of land legally described as LOT A, SECTION 12, DENMAN ISLAND, NANAIMO DISTRICT, PLAN VIP88949 currently zoned as Rural Residential (R2) to be rezoned to Rural Residential 2(6), (R2(6));
4. That Denman Island Local Trust Committee Bylaw No. 220, cited as "Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015", be read a second time as amended;
5. That Denman Island Local Trust Committee Bylaw No. 220, cited as "Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015", be read a third time; AND
6. That Denman Island Local Trust Committee Bylaw No. 220, cited as "Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015", be forwarded to the Secretary of the Islands Trust for approval by the Executive Committee.

Prepared and Submitted by:



Rob Milne, MCIP
Island Planner

June 27, 2016

Date

Concurred in by:



Ann Kjerulf, MCIP
Regional Planning Manager

June 29, 2016

Date

Attachments:

1. June 25, 2016 Public Hearing Submissions
2. Revised Appendix No. 2
3. Proposed Official Community Plan Bylaw No. 219
4. Proposed Land Use Bylaw No. 220 (Revised)



Islands Trust

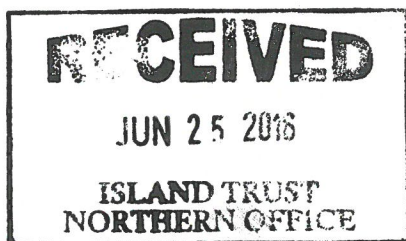
Submission Form- Comments

Denman Island Local Trust Committee

Public Hearing - Bylaw Nos. 219 and 220

June 25, 2016

I support the proposed bylaw as it is legal. While there is controversy over density transfers, our island does have situations where it is helpful for senior/affordable housing. So it is allowed and I think that's right.



Bew Hollingsworth
PO Box 1
Denman Is. VOR 1T0



Submission Form- Comments

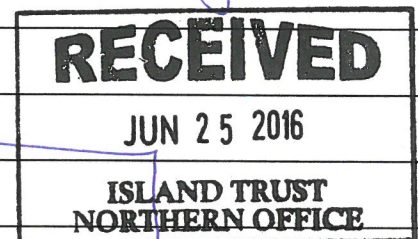
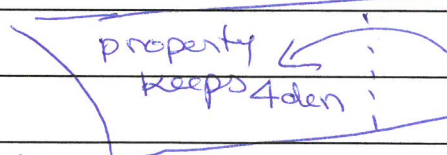
Denman Island Local Trust Committee

Public Hearing - Bylaw Nos. 219 and 220

June 25, 2016

I would also like to submit for the LTC to consider seriously that the procedure of density transfer for conservation purposes be rewritten as soon as possible. The original idea proposed for our OCP did facilitate conservation of small parcels but did not affect other lands on Denman. Thus neighbours ^{of the conserved downspace parcel} were benefitted and no other neighbours on Denman were affected. In the original proposal if a small portion of a property was conserved thru a donation then this donating property would ~~also~~ have the option to keep its densities and if appropriate its ability to sub divide. A new zone for these donating properties could be established perhaps called " ~~Sub & Sub~~ Remaining after Conservation " Zone.

In this case, for example



- if these property could prove water, set backs, perc etc it could apply for houses, subdivision ^{surrounding}. The area would ~~be~~ not be different overall as this big →

piece would be in conservation.

Please consider re-visiting our existing density transfer bylaw to further restrict it and avoid this very unfortunate effect on other islands.

Thank you for your consideration
of this.

Jenny Balke 162



Islands Trust

Submission Form- Comments

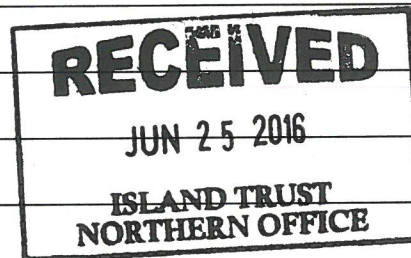
Denman Island Local Trust Committee

Public Hearing - Bylaw Nos. 219 and 220

June 25, 2016

Because of potential impacts on neighbors
in the area of the receiving property -
I believe this bylaw (19, 20) should be
rejected. The Donation is good - but the
receiving property should be changed.
I see many ^{potential} problems of this bylaw
pages. So "no" is my vote.

Ching





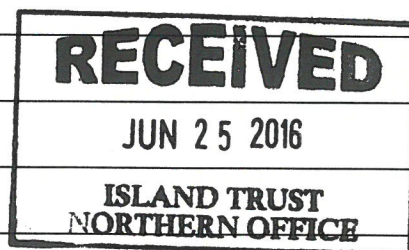
Submission Form- Comments

Denman Island Local Trust Committee
Public Hearing - Bylaw Nos. 219 and 220
June 25, 2016

IS THIS GOING TO BE DEMOCRATICALLY
DECIDE. IF SO, ALL THE NEGATIVE COMMENTS
& CONCERNS SURELY MEAN THE PROPOSAL SHOULD
BE REJECTED

THANK YOU

ALAN STODDARD





Submission Form- Comments

Denman Island Local Trust Committee

Public Hearing - Bylaw Nos. 219 and 220

June 25, 2016

1. One Neighbor is hypersensitive to further development near the receiving land. Health is dependent on isolation.
2. Therefore increase in density is not optimal.
3. Traffic increase in the area is not welcomed by the neighbors.
4. Secondary dwellings could increase further the density of households on the donor land.
5. Water movement could be disrupted as has already been seen within the quarter section of the receiving land.

On the above basis I propose the receiving location been moved to another place and the bylaws be modified accordingly or rejected.

Shawn M. White
10801 Grantell Rd

RECEIVED

JUN 25 2016

ISLAND TRUST
NORTHERN OFFICE

June 24, 2016

After hearing all the information regarding these by-law changes, I do favour the density exchange, but not to the property that is designated to receive the additional density. This property has already been subdivided to its maximum allowed. I believe further subdivision and rezoning is inappropriate and unfair to neighbouring property owners.

One of the essential elements that makes Denman island so very special is that it is normally a very caring community. Decisions are often made to uphold and protect those that are least able to protect themselves rather than for the financial benefit of another.. The additional density on this particular property does have the potential to cause harm to more than one neighbour.

I would request that by-law 219, part b be rejected and that bylaw 220, parts b and c be rejected.

At the very least I would urge Islands Trust to apply Land Titles Act 219 Covenants to restrict burning, pesticide use and location of buildings.

Submitted by:



Peter and Anna Lin Thomsen
2000 Triple rock Dr.
Denman island, BC





Submission Form- Comments

Denman Island Local Trust Committee

Public Hearing - Bylaw Nos. 219 and 220

June 25, 2016

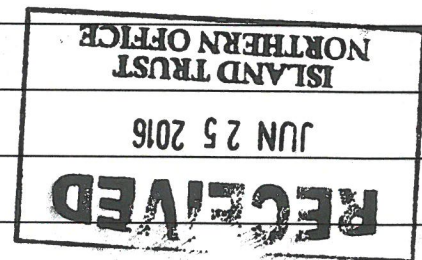
MICHAEL TAYLOR - 3315 LACON ROAD, D.I.

In light of ongoing potable water supplies on D.I., I suggest the Islands Trust seriously consider requiring all new or expanded properties to instal a non-potable rainwater harvesting system as part of construction.

Use of potable water for grass or flower growing or even for watering food crops is a waste, when rain water is plentiful during most months of the year.

Rainwater is a suitable replacement, preserving potable well water for human or animal use.

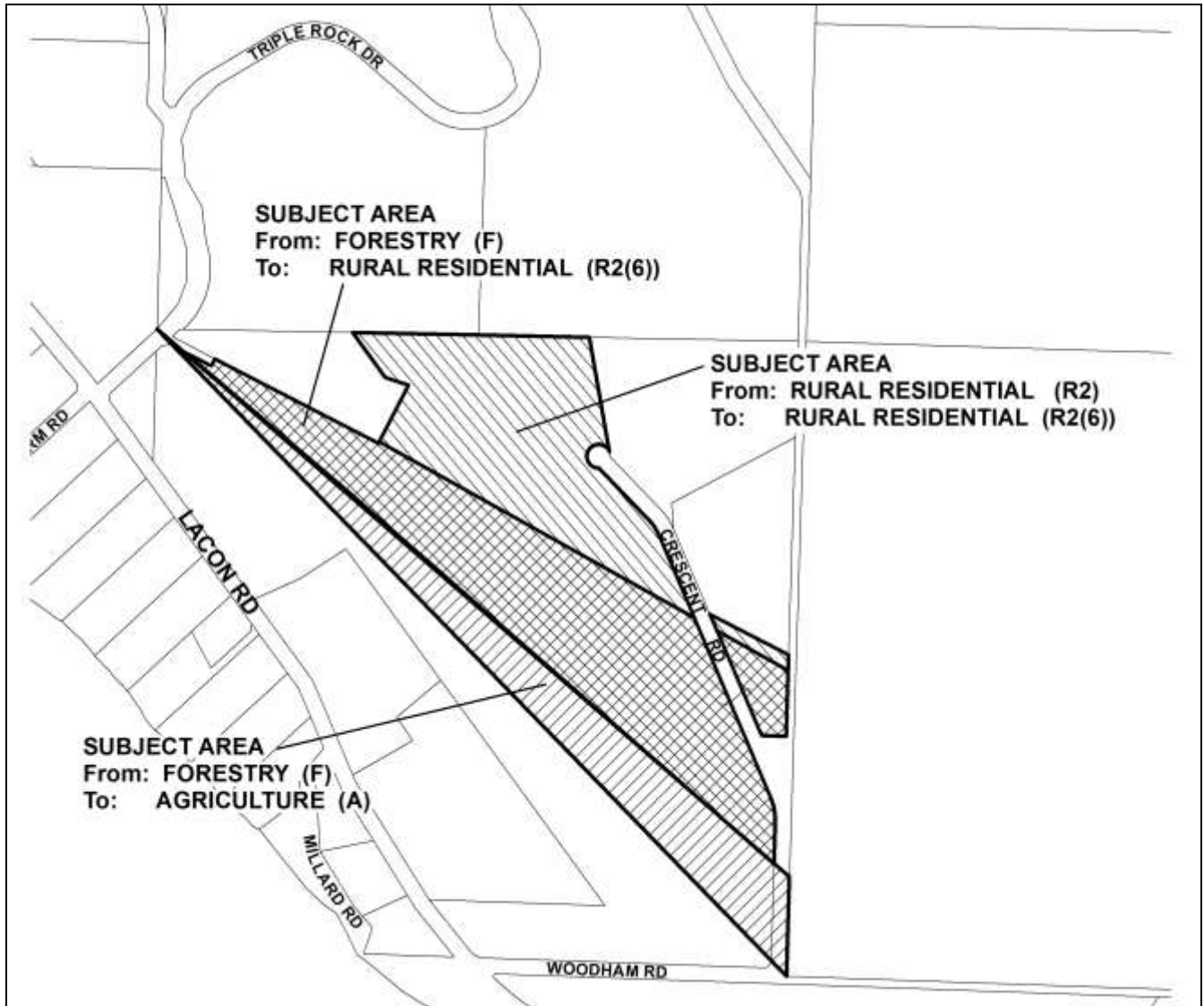
When recommending rainwater harvesting, I'm not thinking of a couple of rain barrels being compliant, but tankage which captures 100% of the average precipitation over the last 40 years of rain fall records.



DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 220

Appendix No. 2



PROPOSED

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 219

A BYLAW TO AMEND DENMAN ISLAND OFFICIAL COMMUNITY PLAN, 2008

The Denman Island Local Trust Committee, being the Trust Committee having jurisdiction in respect of the Denman Island Local Trust Committee Area under the *Islands Trust Act*, enacts as follows:

1. That Denman Island Local Trust Committee Bylaw No. 185 cited as “Denman Island Official Community Plan, 2008” is altered as shown on Schedule “A” of this amending bylaw.
2. This Bylaw may be cited as "Denman Island Official Community Plan, 2008, Amendment No. 2, 2015”.

READ A FIRST TIME THIS 28th DAY OF May, 2015

READ A SECOND TIME THIS 21st DAY OF July, 2015

PUBLIC HEARING HELD THIS st DAY OF , 2015

READ A THIRD TIME THIS st DAY OF , 2015

APPROVED BY THE EXECUTIVE COMMITTEE OF THE ISLANDS TRUST THIS _____
th DAY OF _____, 2015

APPROVED BY THE MINISTER OF COMMUNITY AND RURAL DEVELOPMENT THIS
th DAY OF , 2015

ADOPTED THIS th DAY OF , 2015

SECRETARY

CHAIRPERSON

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 219

Schedule A

Denman Island Local Trust Committee Bylaw No. 185, cited as “Denman Island Official Community Plan, 2008” is amended as follows:

1. That the Residential Density Bank table of Appendix D, “Density Banking” be amended by the addition of a new entry, in sequential order, which reads as follows:

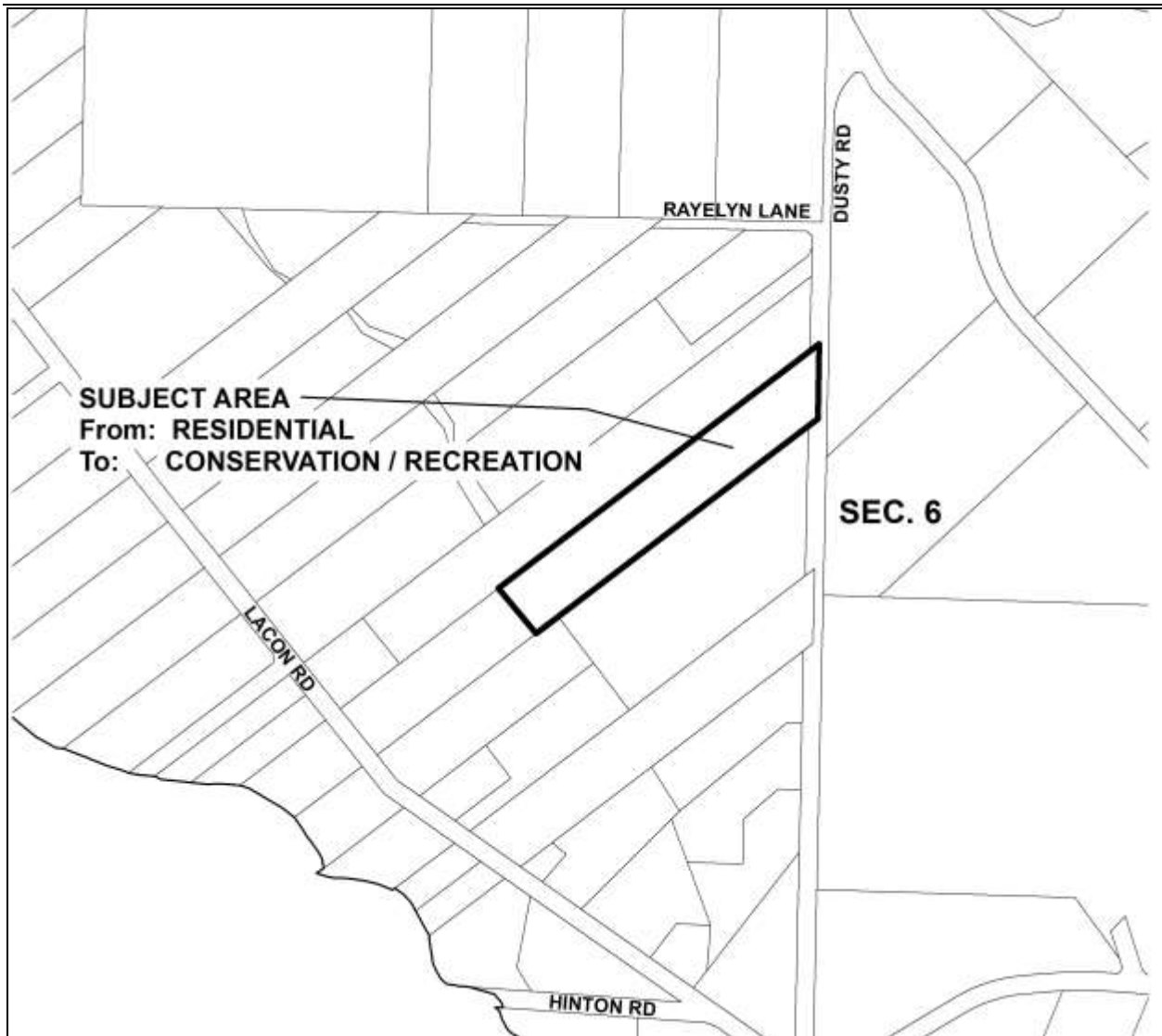
Authorizing Bylaw	Date Added to or transferred from the Bank	Legal Description	Number of residential dwelling units added or deleted	Cumulative Total of residential dwelling units in the bank
219	[date of adoption]	Lot 17, Section 6, Denman Island, Nanaimo District, Plan 6404 (6080 Lacon Road)	+1	14

2. Schedule C [Land Use Designations] is amended by changing the land use designations as follows:
 - a) On portions of land legally described as LOT 17, SECTION 6, DENMAN ISLAND, NANAIMO DISTRICT, PLAN 6404 the land use designation is changed:
from “Residential” to “Conservation/Recreation”;
as shown on Appendix No. 1 attached to and forming part of this bylaw.
 - b) On portions of land legally described as LOT A, SECTION 12, DENMAN ISLAND, NANAIMO DISTRICT, PLAN VIP88949 the land use designation is changed:
from a split “Sustainable Resources” and “Rural” designation to “Rural”;
as shown on Appendix No. 2 attached to and forming part of this bylaw.

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 219

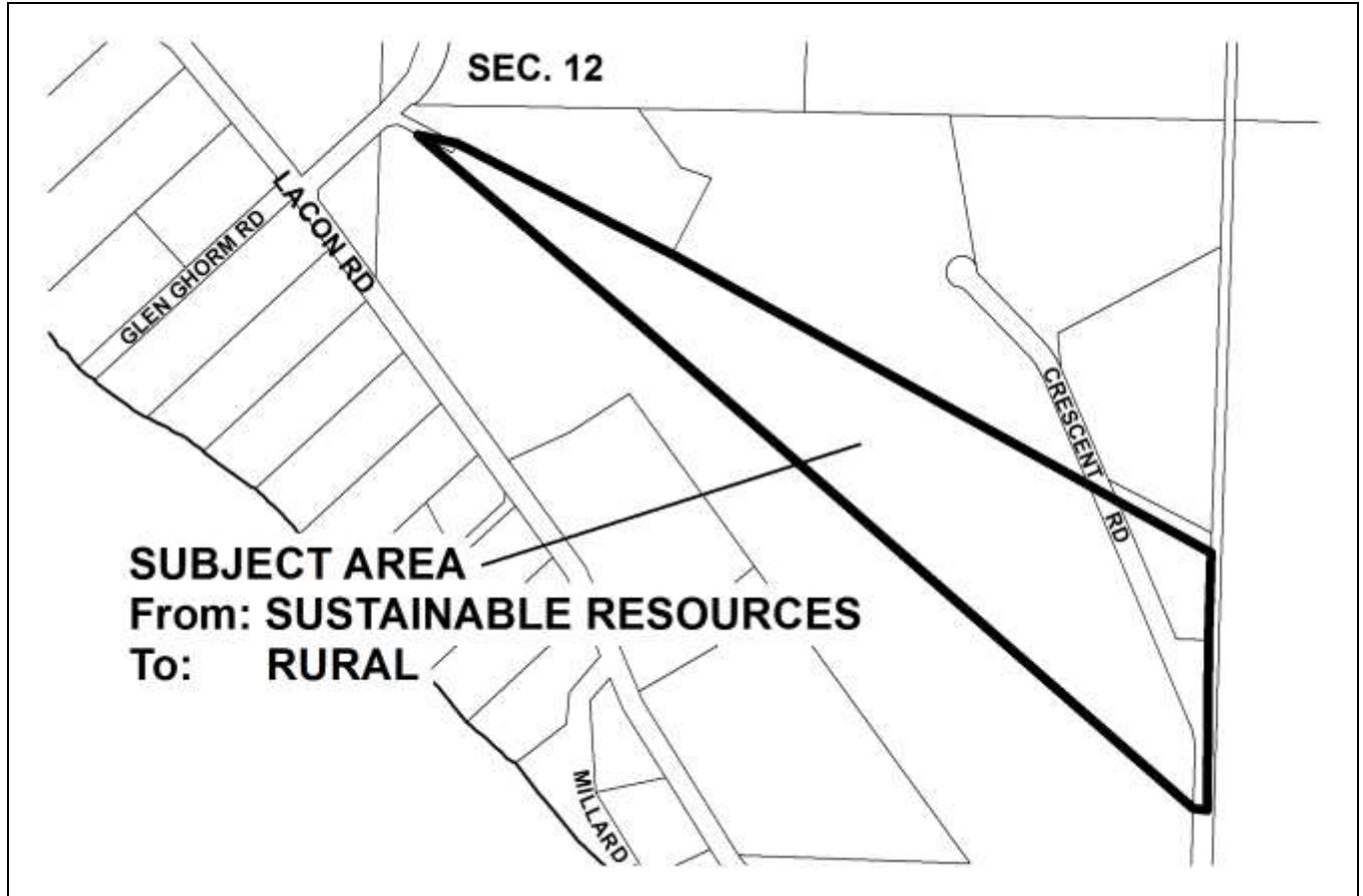
Appendix No. 1



DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 219

Appendix No. 2



PROPOSED

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 220

A BYLAW TO AMEND DENMAN ISLAND LAND USE BYLAW, 2008

The Denman Island Local Trust Committee, being the Trust Committee having jurisdiction in respect of the Denman Island Local Trust Committee Area under the *Islands Trust Act*, enacts as follows:

1. That Denman Island Local Trust Committee Bylaw No. 186 cited as “Denman Island Land Use Bylaw, 2008” is altered as shown on Schedule “A” of this amending bylaw.
2. This Bylaw may be cited as "Denman Island Land Use Bylaw, 2008, Amendment No. 3, 2015”.

READ A FIRST TIME THIS 26th DAY OF MAY, 2015

READ A SECOND TIME THIS 21st DAY OF JULY, 2015

PUBLIC HEARING HELD THIS 15th DAY OF March, 2016

READ A THIRD TIME THIS DAY OF , 2016

APPROVED BY THE EXECUTIVE COMMITTEE OF THE ISLANDS TRUST THIS _____ DAY OF _____, 2016

ADOPTED THIS DAY OF , 2016

SECRETARY

CHAIRPERSON

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 220

Schedule A

Denman Island Local Trust Committee Bylaw No. 186, cited as “Denman Island Land Use Bylaw, 2008” is amended as follows:

1. That Table 8 – “Site Specific Regulations” of Part 3.3, “Residential Zoning Tables” be amended by the addition of a new entry in sequential order which reads as follows:

Site Specific Zoning Code	Site Specific Regulations
“R2(6)”	1 Despite line 1 in Table 7 of this Section, the maximum density permitted by subdivision is an average of one lot per 5.56ha.”

2. Schedule “B” [zoning map] is amended by changing the zoning classifications as follows:

- a) On portions of land legally described as LOT 17, SECTION 6, DENMAN ISLAND, NANAIMO DISTRICT, PLAN 6404 the zoning classification is changed:

from Residential (R-1) to Conservation (CN);

as shown on Appendix No. 1 attached to and forming part of this bylaw.

- b) On portions of land legally described as LOT A, SECTION 12, DENMAN ISLAND, NANAIMO DISTRICT, PLAN VIP88949 the zoning classification is changed:

from a split zoning of Rural Residential (R2) and Forestry (F) to Rural Residential 2(6), (R2(6));

as shown on Appendix No. 2 attached to and forming part of this bylaw.

- c) On portions of land legally described as SOUTH EAST 1/4 OF SECTION 12, DENMAN ISLAND, NANAIMO DISTRICT, EXCEPT PART IN PLANS 15079, 19060, VIP60280, VIP79163 AND VIP88949 the zoning classification is changed from:

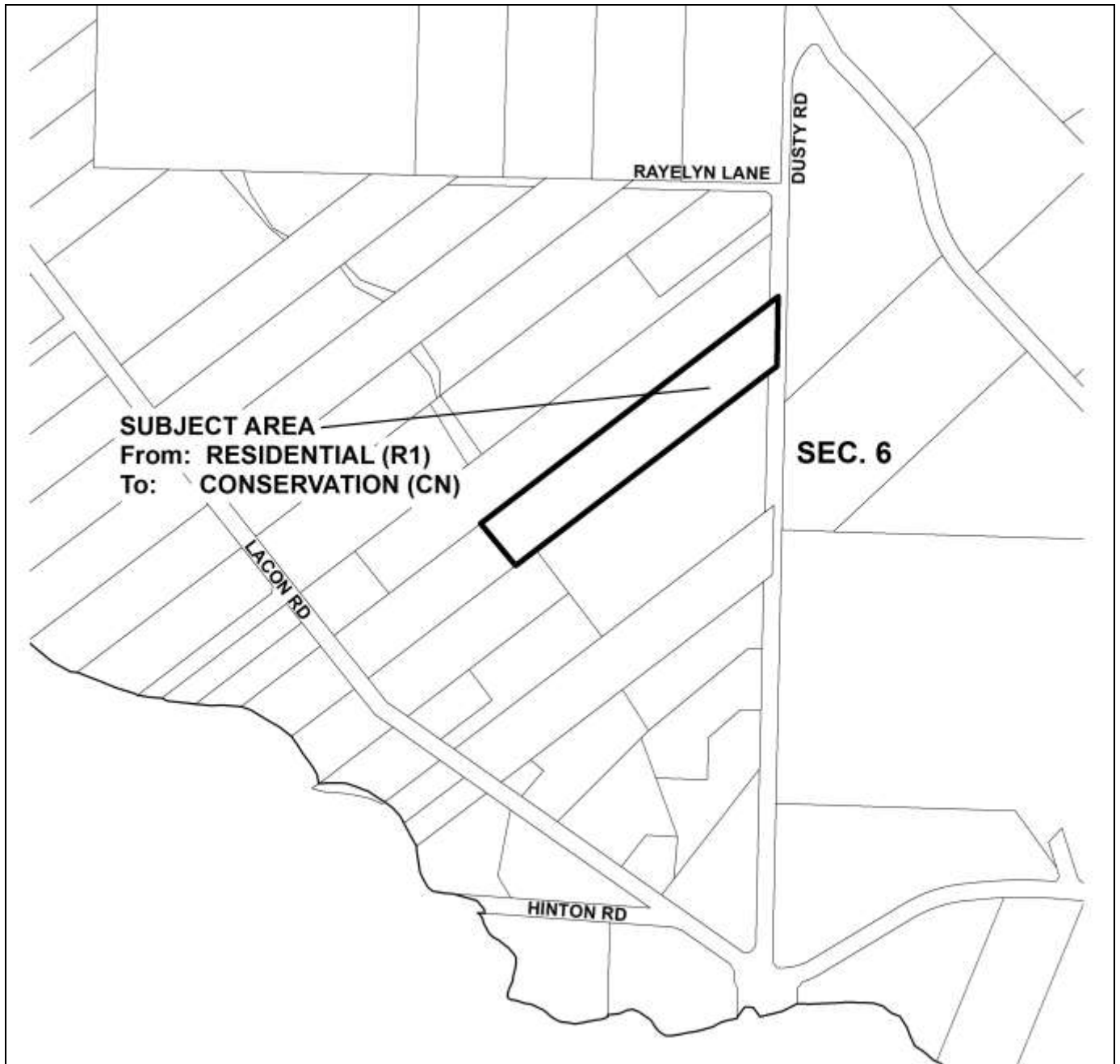
Forestry (F) to Agriculture (A)

as shown on Appendix No. 2 attached to and forming part of this bylaw.

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 220

Appendix No. 1



DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 220

Appendix No. 2

