



Community/Institutional Land Use and Utilities Land Use Management Plan for Proposed Trobak Hill Water Storage Reservoir

1. Introduction

The Village of Telkwa is located in north-western British Columbia. The community is located approximately 12 kilometres south of Smithers, BC at the confluence of the Bulkley and Telkwa Rivers with nearly 1500 resident's calling this home.

The Village is currently supplied with water from a river intake located on the west bank of the Bulkley River. The water from the Bulkley River is treated by a water treatment plant which then is pumped to the Villages only water storage tower located off Morris Road on the West side of the Bulkley River. The water tower then distributes 909,000 Litres of treated water to the entire Village by gravity. There is also a untreated production well on the east side of the Bulkley River, adjacent to the fire hall, that occasionally is used to provide additional capacity during periods of high demands, usually during summer.

2. Background

Community/Institutional Purpose: The Village of Telkwa is requesting a Nominal Rent Tenure (NRT), for public works, for 30 years or more, to build a new 1.6 Million Litre (19m diameter x 5.5m high) water reservoir on Crown Lands adjacent to the Village of Telkwa municipal boundaries. This Crown Land includes Agricultural Land Reserves (ALR) jurisdiction and resides within the Regional District Bulkley-Nechako (RDBN) boundaries - zoned Agricultural (AG-1).

Location: NW ¼ Section 25, Township 5, Range 5, Coast District

Utilities Purpose: The Village of Telkwa is requesting a Nominal Rent Tenure, for a utilities water line, for 30 years or more to install a 1200m length of 300mm diameter water main on Crown Lands from its existing water main on Telegraph Street to the proposed new reservoir on Crown Land. This Crown Land includes Agricultural Land Reserves (ALR) jurisdiction and partially resides within the Regional District Bulkley-Nechako (RDBN) boundaries - zoned Agricultural (AG-1).

Location: NE ¼ Section 26, Township 5, Range 5, Coast District and NW ¼ Section 25, Township 5, Range 5, Coast District.

The municipality is applying for the February 2015 Building Canada Small Communities Fund. This fund application requires a project ready application which would require the Village to receive a letter of approval from Front Counter BC confirming our request to construct on crown land will be granted. This is a partnership fund – with a provincial 1/3 contribution and federal 1/3 contributions being provided to supplement our municipal 1/3 project contribution.

This infrastructure expansion has been part of our long term planning and is a known need. Our request to go forward with this construction project is guided by long term planning, spurred by steady population growth and enabled through long term financial planning. See attached references from our Official Community Plan and Integrated Community Plan, included with our Crown Land Tenure application. Our request for approval to construct a road, a water line and a reservoir is also guided by our long term financial plan as our staff and past council(s) have been anticipating this need for additional water storage and appropriately set aside funds to enable the construction. See attached to our Crown Land Tenure application, a copy of a simplified financial plan.

An onsite preliminary investigation was undertaken by the Village Engineering Technologist to determine if a feasible utility corridor was possible with minimal impact to the surrounding lands and vegetation. It was determined this is very feasible and site photos were taken to show the proposed location for the utility corridor and proposed reservoir site. See attached photos submitted with our Crown Land Tenure application.

3. Location and Infrastructure

The location of the project is dictated by elevation. Our existing Morris Reservoir - open to atmosphere - is at an elevation of 585 meters. This elevation governs our current system pressures as it is a direct relationship to gravity. At this elevation our static pressures in the downtown area are already at 119 psi. Any variance in this height to the proposed Trobak water storage tower will either, increase or decrease, our system pressures. Furthermore, any elevation differential will cause one reservoir to empty before the other which also affects the total useable water storage in the two reservoirs making the overall use of this storage deficient. The only lands available at this elevation that make our project cost effective fall within Crown Lands, therefore, it is critical we get a NRT with Crown Lands. For this reason alone, we are obligated to ask Crown for permission(s) to build at this location for the best practices of our water distribution system.

A major weakness and risk to the Village water system is that the supply, treatment and storage for the entire village reside on the west side of the Bulkley River. Water supply to the commercial and residential properties on the east side of the Village water system are very vulnerable in that, other than the small, untreated production well, their entire service is provided via a single 200mm diameter water main crossing the Bulkley River on the Coal Mine Road (Telkwa) bridge. This bridge is an old single lane wood truss structure and is used for all access to the west side of the Village. The bridge also carries logging truck traffic accessing the logging areas up the Telkwa River. The high number of heavy and oversize trucks using the bridge increases the potential for an accident that will damage the bridge and water main. Any proposed upgrades to the existing water main on the bridge are not recommended by Ministry of Transportation and Infrastructure (MOTI). See attached MOTI letter submitted with our Crown Land Tenure application. It is also a known concern that with the Pine Beetle infestation has direct environmental impacts, such as surface water runoff, which encourage increased river elevations which in return could create river debris congestion at the confluence of the Bulkley and Telkwa rivers. This congestion increases the potential risk of damage to the bridge and the Village water mains and sewer mains suspended from the bridge.

Another major weakness and risk to the Village water system is its current water storage capacity, limited fire flows and limited system pressures do not meet the minimum requirements of the Fire Underwriters Survey (FUS) or the Master Municipal Construction Documents (MMCD) to adequately protect its community. See breakdown of minimum requirements below:

- **System Pressures** = 40psi or greater.
- **Fire Flows** = 50L/s for residential and 150L/s for commercial (133L/s recommended).
- **2014 Water Storage (entire community)** = 1,148,000 Litres
- **2034 Water Storage (entire community)** = 2,500,000 Litres

Water Storage is currently 909,000 Litres

System Pressures are adequate for the entire community except for the Tower Bench Area and are as low as 14.0psi.

Fire Flows (East Side of Bulkley River) are **inadequate** for the entire community. The following fire flows are indicated below and are shown on the attached map:

- Tower Bench Area = 3.81 - 4.15 L/s (residential)
- Downtown Area = 4.35 - 5.46 L/S (mixed residential and commercial)
- Highway = 4.39 - 4.44 L/S (mixed residential and commercial)

Fire Flows (West Side of Bulkley River) are **inadequate** for some areas of the community. The following fire flows are indicated below:

- Cottonwood Flats = 9.52 - 14.41 L/s (residential)
- Walnut Street = 11.15 - 22.11 L/s (residential)
- Willow Street = 19.00 - 28.84 L/s (residential)

If the Village is granted permission to construct the proposed Trobak Reservoir its system pressures and fire flows would increase dramatically. The cost to make these additional improvements is \$2,250,000 which includes Engineering pre-design, design, construction management and scheduling, and project completion. The Village has attached two Engineering reports from OPUS DaytonKnight with its Crown Land Tenure Application for reference. These reports analyzed our current distribution systems, noted the existing deficiencies within the systems, and provided recommendations for improvements to these systems to help improve for fire flows, water storage and system pressures.

Using Statistics Canada and modelling software the Village is able to predict future projection of growth by 696 persons, a 34% population increase by the year 2034. The results of these predictions are shown below in two scenarios.

Water Storage proposed 1,600,000 Litres plus existing 909,000 Litres Morris Reservoir

System Pressures are **adequate** for the entire community.

Fire Flows are **vastly improved** throughout the entire community. The following fire flows are indicated below:

- Tower Bench Area = 28.73 - 143.04 L/s (residential)
- Downtown Area = 68.42 - 82.10 L/S (mixed residential and commercial)
- Highway = 49.81 - 70.45 L/s (mixed residential and commercial)
- Cottonwood Flats = 63.10 - 115.33 L/s (residential)
- Walnut Street = 73.41 - 122.01 L/s (residential)

- Willow Street = 22.35 – 127.40 L/s (residential)

Once the Village is granted permission to construct the proposed Trobak Reservoir it will then look at completing the final improvements required to upgrade the entire distribution system. The cost to make these additional improvements is \$408,000 which includes Engineering pre-design, design, construction management and scheduling, and project completion. See below the following improvements to the water system with the final upgrades to the existing water distribution system.

Water Storage proposed 1,600,000 Litres plus existing 909,000 Litres Morris Reservoir

System Pressures are **adequate** for the entire community.

Fire Flows are **adequate** for the entire community. The following fire flows are indicated below:

- Tower Bench Area = 33.21 – 141.43 L/s (residential)
- Downtown Area = 123.66 – 139.12 L/S (mixed residential and commercial)
- Highway = 51.34 – 123.70 L/s (mixed residential and commercial)
- Cottonwood Flats = 63.63 – 122.49 L/s (residential)
- Walnut Street = 76.33 – 126.62 L/s (residential)
- Willow Street = 22.52 – 131.71 L/s (residential)

Project Schedule

Approval of 2015 Building Canada Small Communities Fund - August 2015

Detailed Design..... - August 2015 – February 2016

Tendering..... - March 2016

Construction..... - May-October 2016

4. First Nations

There are no known aboriginal sites or known archeological sites within our application area. There have been no formal communications between the Village of Telkwa and the Office of the Wet'suwet'en, except for a letter of introduction and communication to our project.

5. Environmental

a. Land Impacts

Installation of our proposed access road, water main and reservoir will consist of standard construction practices following both the MMCD and Village of Telkwa Subdivision and Development Servicing Bylaw No. 642, 2014. See attached to our Crown Land Tenure application, a copy of the Village Bylaw No.642, 2014 and typical trench details from the MMCD.

The proposed gravel access road, overtop of our proposed water main, will be 5m wide and travel approximately 1200 m to the reservoir site. There will also be a power supply line install along or within the utility right-of-way from Telegraph Street to the new reservoir site. The requested Utility Right-of-Way will need to be a 10.0m wide to accommodate the installation of the utility water line and/or power line.

The Utility Right of Way is proposed to follow an existing trail network to minimize and environmental or ecological impacts to the area. There are no long term adverse environmental effects anticipated from this utility corridor and reservoir construction. During construction there will be vegetation cutting, land clearing, tree falling for the road width and the reservoir footprint. Visual impact for the road corridor and the reservoir are minimal as the area is also surrounded by forest on both sides. The Road will be constructed with suitable pit run gravel material. Ditches and culverts may be required to ensure proper drainage and avoid erosion in critical areas and will be dealt with when and if these concerns arise during construction. Native earth removed will be stockpiled for backfilling and reused for the infill of ditches and the road, where applicable. Unsuitable earth will be removed from the site and disposed of in an appropriate manner and reclaimed lands will be seeded with native vegetation. The road will be used occasionally by our village works staff for routine inspections or maintenance. Traffic volume will be restricted to Village staff and infrequent. Seasonal plowing of the access road will be done by our works staff in order to keep the road open for our staff inspections or maintenance.

The reservoir site will be enclosed with an 8ft fence and a lockable gate on the access road to restrict access of unauthorized personnel to the immediate reservoir site. Infrequent visits to the site will be done, only by our works staff, and like all of our municipal sites, will have a safety protocol for access. The adjacent lands outside the request crown lands are within the Village of Telkwa and are zoned residential and comprehensive development and are either occupied or vacant. No septic is planned on site as this site will not be a staffed location.

There are no existing agricultural uses of the lands we are requesting and no existing agricultural uses of the lands adjacent to the requested lands.

The Village drinking water quality would not be compromised during construction and would be at the same high level of quality during and after construction - No Negative Impacts.

b. Atmospheric Impacts

The only noise anticipated would occur during the construction process over an approximate 6 month timeframe. The operation and maintenance of the utility road and the reservoir will result in no noise disturbances, no odor and little to no gas or fuel emissions created by the Village works department during these routine maintenance or winter road snow plowing.

c. Water or Land Water Impacts

The Village anticipates no negative drainage impacts as road construction will take into account the necessary ditches/culverts required to maintain the current ecosystems.

The Village anticipates no sedimentation, no water diversion and no flood potential with this project.

The Village anticipates no negative impacts on water diversion, quality or flooding.

There will be no negative impact on the public or access to the lands requiring access.

d. Fish and Wildlife

This project, both during construction and maintenance, should have no negative impact upon fish or wildlife habitat. There are no known bodies of water in the area, so no disturbance to fish or marine habitat will occur. There are no known threatened or endangered species in the area.

6. Socio-Community

a. Land Impacts

This Crown Land is not a public recreation area; however, the Village of Telkwa has an existing Crown Land Agreement, License 635995, for community walking trails. In this document there is reference to a management plan schedule, but no plan attached.

There are no known land management plans for this area that the Village of Telkwa is aware of.

b. Socio-Community Conditions

This project does not represent an increased demand on fire protection or emergency services for the crown lands sought.

This project – with the increased water storage for our municipality – represents a positive impact on our fire protection and emergency services as it increases our water system reliability.

7. Conclusion

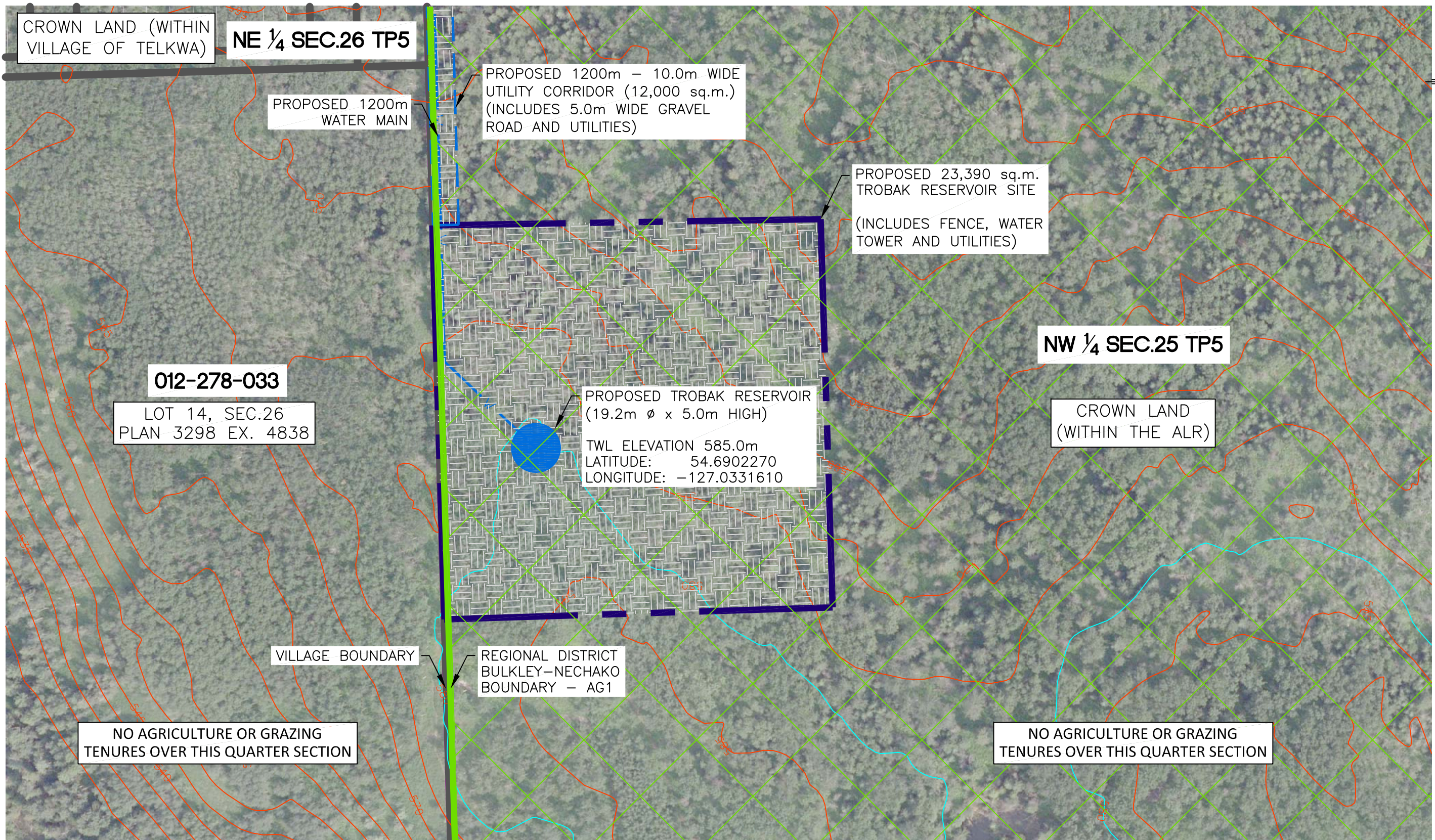
The current Village of Telkwa water distribution system does not have the required water storage to meet its community needs. The Village cannot provide adequate fire protection to ensure sufficient protection services to its community and is limited to the amount of development it can provide, as a result. Without a new water main and water storage reservoir on Trobak Hill, the Village of Telkwa will continue to operate its municipality at RISK.

In addition to removing the risk to the community by providing adequate fire protection services, the construction of a new Reservoir would allow opportunity for residential growth, commercial growth which is part of our long term planning and long anticipated step in enabling our continued growth. Telkwa is one of the few small northern communities to have a consistent growth rate and this expansion of our water system is necessary to best provide for this growth – both for existing and future residential and commercial areas of our municipality.

8. Mapping

Trobak Hill Reservoir Location Map
Trobak Hill Utility Corridor Plan
Trobak Hill Troback Reservoir Site Plan

All mapping is submitted with the Crown Land Tenure Application.



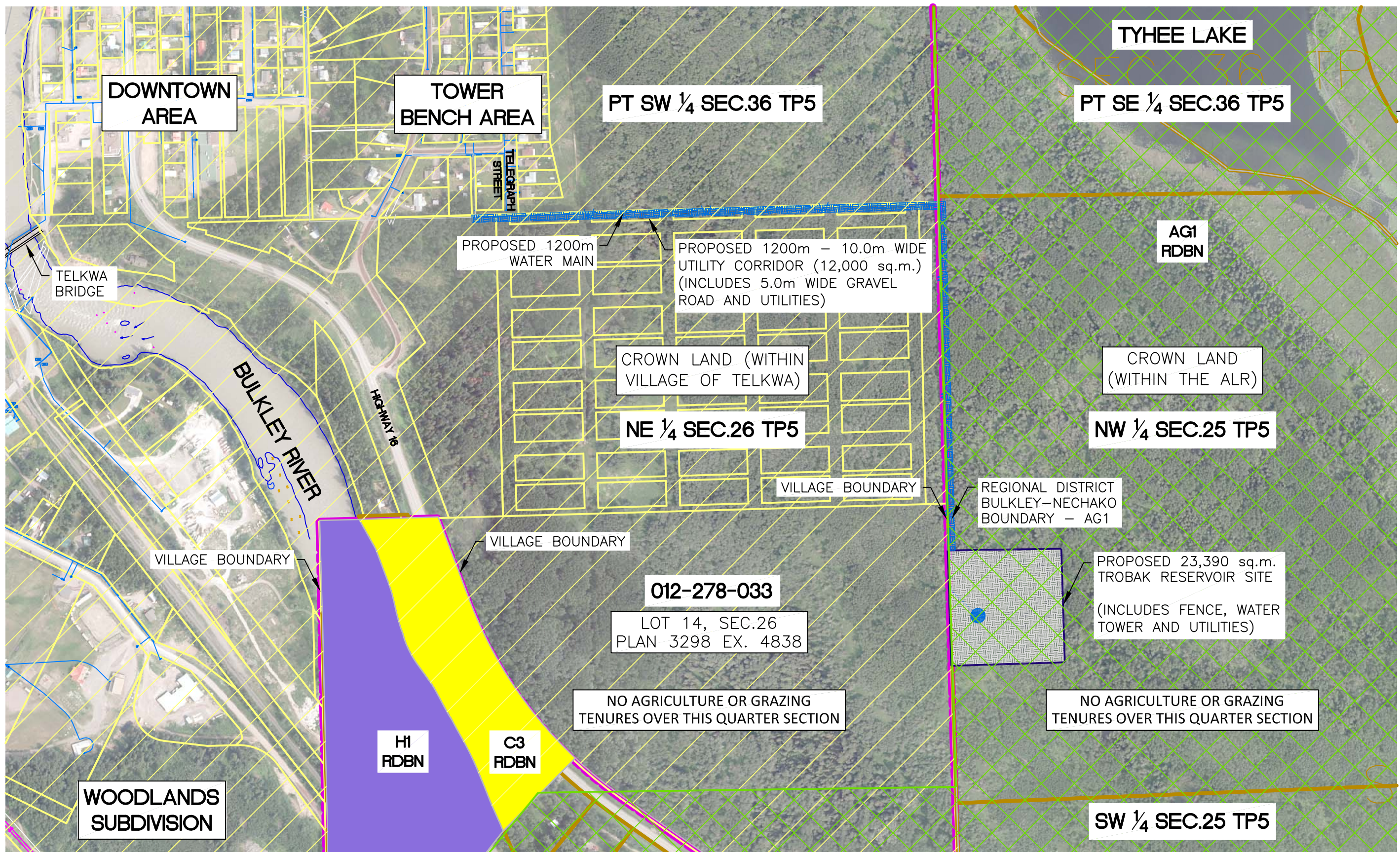
Trobak Hill Reservoir Site Plan

SCALE: 1:1500

Disclaimer

Village of Telkwa (VoT) believes that the information contained herein is reliable and generally accurate for the purpose intended. Receiver assumes all risk and liability for any losses, damages, claims or expenses resulting from the use or possession of any file(s) furnished by VoT. Revisions or additions to these drawings shall be issued periodically and it shall be the responsibility of the receiver of these file(s) to keep them current with any updates.

Telkwa



Trobak Hill Reservoir Utility Corridor Plan

SCALE: 1:5000

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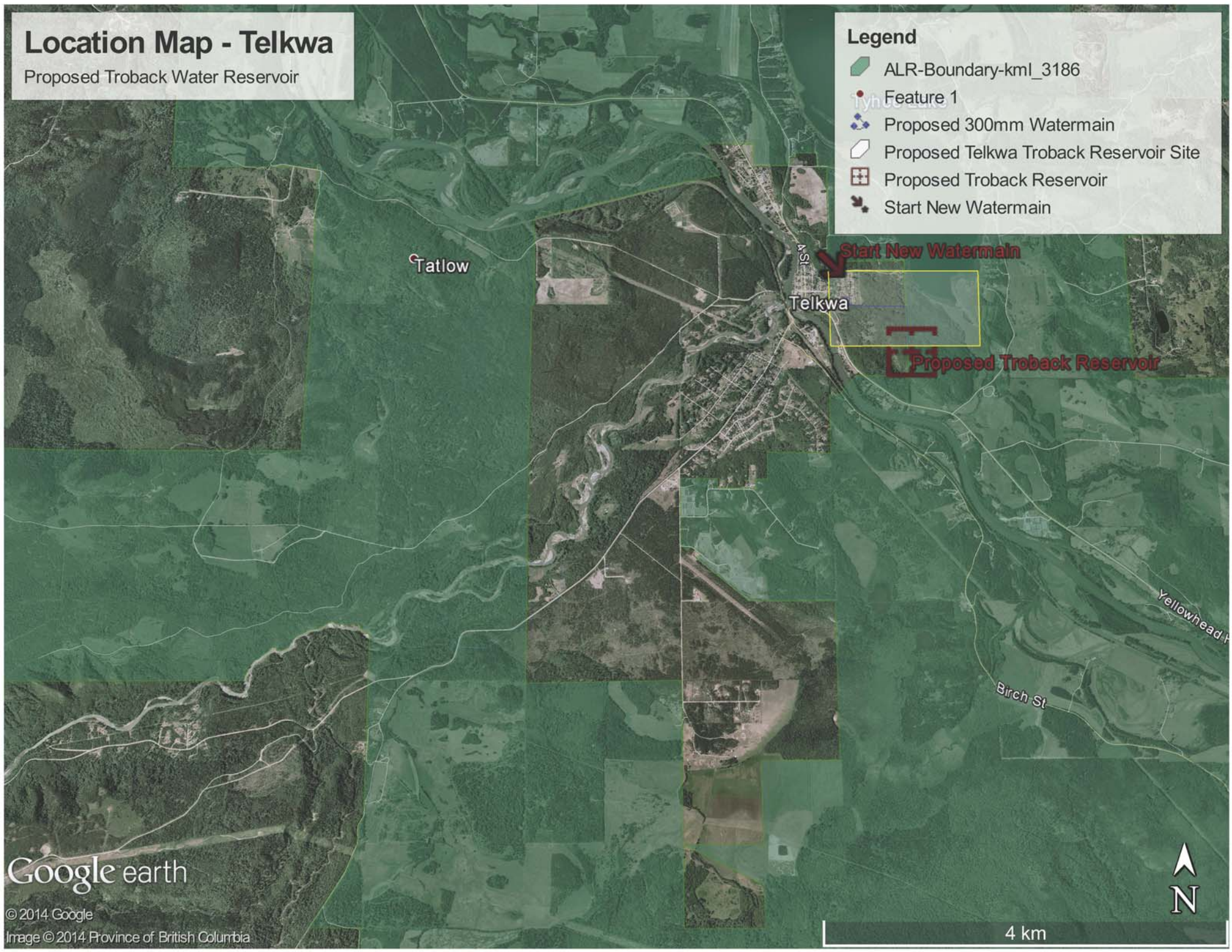
Telkwa

Location Map - Telkwa

Proposed Troback Water Reservoir

Legend

- ALR-Boundary-kml_3186
- Feature 1
- Proposed 300mm Watermain
- Proposed Telkwa Troback Reservoir Site
- Proposed Troback Reservoir
- Start New Watermain



Google earth

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4 km