YESAB

Yukon Environmental and
Socio-economic Assessment Board

Designated Office Evaluation Report

Takhini Hot Springs New Pools Project

Project Number: 2016-0064

Proponent: Takhini Hot Springs Ltd.

Assessment Completion Date: June 7, 2016

Whitehorse Designated Office

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Summary

Takhini Hot Springs Ltd. (the Proponent) is applying for a water licence renewal to operate and to renovate its hot springs facility, with a maximum water acquisition rate of 560 m^3 per day from the hot springs source. The new facility will consist of public, rental, and Nordic spa pool areas (six hot pools, total volume 60 m^3), and include three cold-water plunge pools, a steam room and sauna, as well as a new heat exchange system. The existing evaporation pond (approx. 0.8 ha, 16 000 m^3) will be maintained. The Proponent will build an additional pond (approx. 0.4 ha, 4 000 m^3) and water discharge stream (following the original channel for approx. 150 m) to provide for further chlorine evaporation and water treatment. The Proponent will install a septic system, and recycle grey water for landscaping use (winter skating area). Construction activities will occur from 2016 through the summer of 2018, with operations and monitoring activities as required for the life of the pool facility (approx. 50 years). The existing facility will remain open until the new facility is completed, at which point it will be decommissioned. Work areas will be fenced off from the public. Work crews will stay in the campground and hostel facilities; no work camp is required.

The Project occurs on the Proponent's property, at the end of the Hot Springs Road off the North Klondike Highway, approximately 30 km from downtown Whitehorse. It overlaps with the Traditional Territories of the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council, and is approximately 1 km east of the boundary for the Champagne and Aishihik First Nation Traditional Territory.

The public comment period for the Project was from April 19, 2016 through May 17, 2016. The Designated Office received comments from the Ta'an Kwäch'än Council, Government of Yukon, and Environment and Climate Change Canada, as well as three submissions from members of the public. Comments raised questions or concerns regarding water quantity and quality, heritage resources, other land users, invasive species, and birds.

Several project activities have the potential to affect wetland habitat, water users, and water quality of the Hot Springs Creek, which enters the Takhini River downstream of the Project. The use of heavy equipment along the watercourse during construction, the use of chlorine in the pools, the installation of a septic system, and regular vehicle use of the nearby parking lot all have the potential to deposit a deleterious substance into the water and/or release sediment into the water. The Designated Office considered potential effects to water quality: sedimentation of the watercourse, and depositing a deleterious substance to water. The Designated Office determined that the Project will not result in significant adverse effects to water quality.

The Decision Body, Government of Yukon Department of Energy, Mines and Resources - Land Use Branch, will review the Recommendation and the accompanying reasons described in this Evaluation Report.

While the Designated Office determined that adverse effects from the Project will not be significant, the Proponent is encouraged to note the following:

- If the Proponent plans to establish a hydrocarbon remediation field on-site, they must apply for a permit to establish and operate a land treatment facility under the Yukon *Contaminated Sites Regulations* from the Government of Yukon. More information is available at: http://www.env.gov.yk.ca/air-water-waste/contaminated_sites_regs.php. Alternatively, if there is a limited amount of contaminated material, it may be taken to a permitted disposal site, as is indicated in the Proponent's Emergency/Spill Response Plan. If necessary, the Proponent

is encouraged to contact the Government of Yukon Department of Environment (Environmental Programs Branch) to discuss the matter further.

- Inspection and maintenance are important components of maintaining erosion and sedimentation control measures; the Designated Office encourages the Proponent to monitor sediment loads on an on-going basis during operations.

- The Designated Office also encourages the Proponent to review Environment Yukon's Best Management Practices for Works Affecting Water in Yukon, available at: http://www.env.gov.yk.ca/publications-maps/documents/bestpractes_water.pdf.

The Decision Body will issue a Decision Document within 30 days, as prescribed under s. 2 of the *Decision Body Time Periods and Consultation Regulations*, that will either a) accept the recommendation, b) vary the recommendation, or c) reject the recommendation.

Assessment Outcome

Under s. 56(1)(a) of the *Yukon Environmental and Socio-economic Assessment Act*, the Whitehorse Designated Office recommends to the Decision Body for the Project that the Project be allowed to proceed, as it determined that the Project will not have significant adverse environmental effects in or outside Yukon.

For more information, please contact:

Name: Cristi Frittaion
Title: Assessment Officer
Whitehorse Designated Office

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PART A. BACKGROUND

Part A provides the context and background information required for the assessment of the Project. Section 1.0 identifies the requirement for an assessment under the *Yukon Environmental and Socio-economic Assessment Act*, while Sections 2.0 and 3.0 provide information and baseline data for the Project and project area. Section 4.0 identifies the scope of the assessment, including matters that were considered in evaluating the significance of potential effects of the Project.

1.0 REQUIREMENT FOR AN ASSESSMENT

The purpose of the proposed project is the direct use of water from a natural hot spring to year-round outdoor public use pools. While several activities are likely to be undertaken in conjunction with this Project, under s. 47 of the *Yukon Environmental and Socio-economic Assessment Act,* the Project is subject to an assessment by the Whitehorse Designated Office due to the following circumstances:

- The proposed activity is listed in column 1 of Schedule 1 of the *Assessable Activities, Exceptions and Executive Committee Projects Regulations* (Activity Regulations) and not listed in column 2 as excepted. The proponent proposes to undertake activities listed in Part 9, item 3 of the Activity Regulations. The specific activity is listed as:

  Direct use of water.

- Is proposed to be undertaken in the Yukon; and
- An authorization or the grant of an interest in land by a government agency, independent regulatory agency, municipal government, or First Nation is required for the activity to be undertaken.

Table 1: The Decision Body
Decision Body and the triggering authorizations required for the Project. This information is based on the project proposal and other information submitted to the Designated Office during the assessment.

Decision Body	Authorization Required	Act or Regulation
Government of Yukon, Department of Energy, Mines and Resources - Land Management Branch - Land Client Services	Water Licence	*Waters Act*

2.0 PROJECT DESCRIPTION

2.1 Proponent Information

Takhini Hot Springs Ltd. is the Proponent; Garry Umbrich (President) is the contact person for the Project. Contact information is available on the YESAB On-line Registry (YOR).[1]

[1] YOR 2016-0064-003-1

2.2 Geographical Context

The Project occurs on the Proponent's property, at the end of the Hot Springs Road off the North Klondike Highway, approximately 30 km from downtown Whitehorse. It overlaps with the Traditional Territories of the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council, and is approximately 1 km east of the boundary for the Champagne and Aishihik First Nation Traditional Territory.

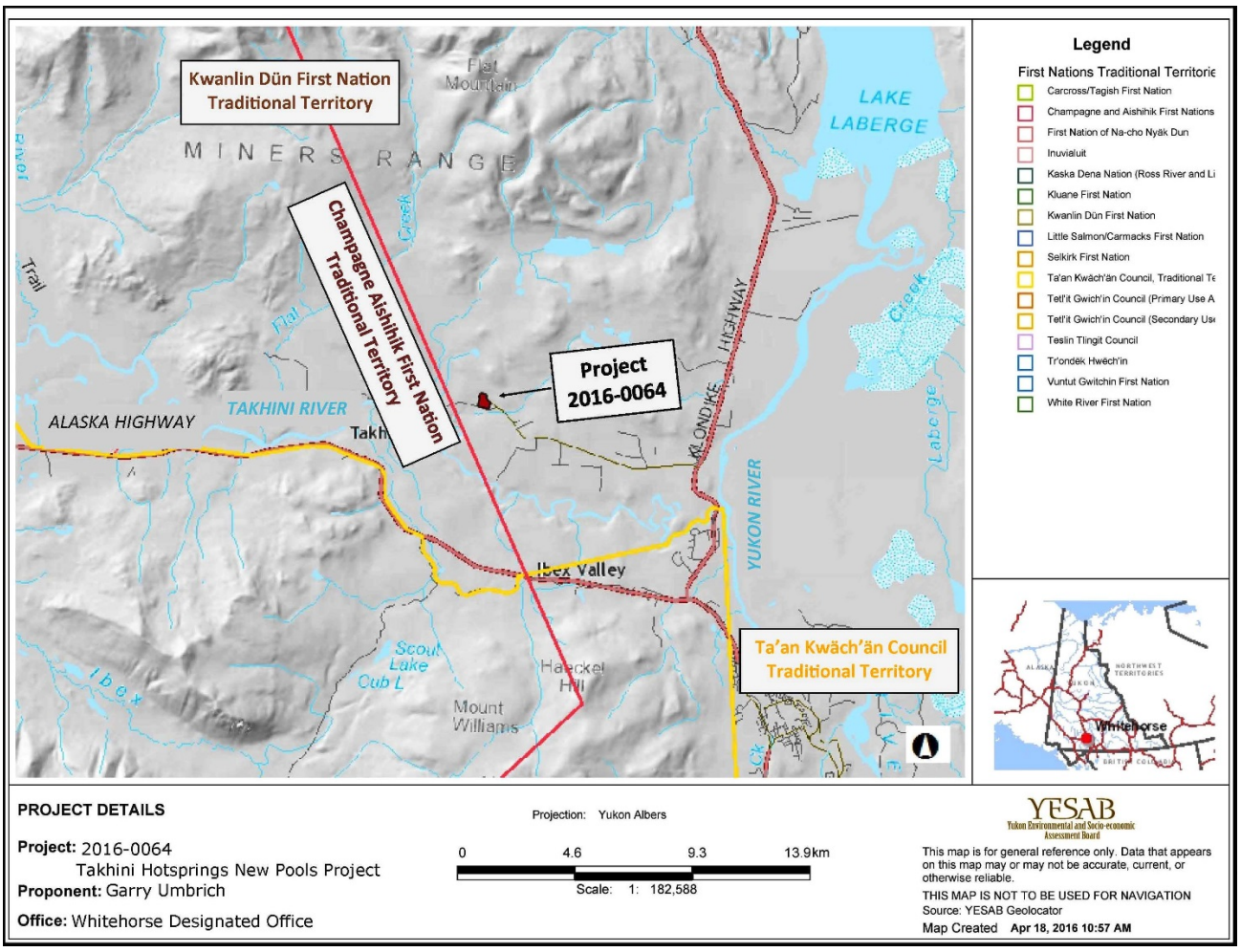

Figure 1: Project location with First Nations Traditional Territories.[2]

[2] YESAB Geolocator

Table 2: Project Location, Coordinates and Geographical Parameters

Project Coordinates: Map Sheet: 105D14	Decimal Degrees NW 60.8786˚ N -135.3626˚ W NE 60.8792˚ N -135.3565˚ W SW 60.8755˚ N -135.3629˚ W SE 60.8746˚ N -135.3550˚ W
First Nation Traditional Territories Involved:	Kwanlin Dün First Nation, Ta'an Kwäch'än Council
Drainage Region:	Major Drainage Area: *Yukon* Sub Drainage Area: *Headwaters Yukon* Sub-sub Drainage Area: *Takhini*
Nearby Watercourses or Waterbodies:	Hot Springs Creek, Takhini River

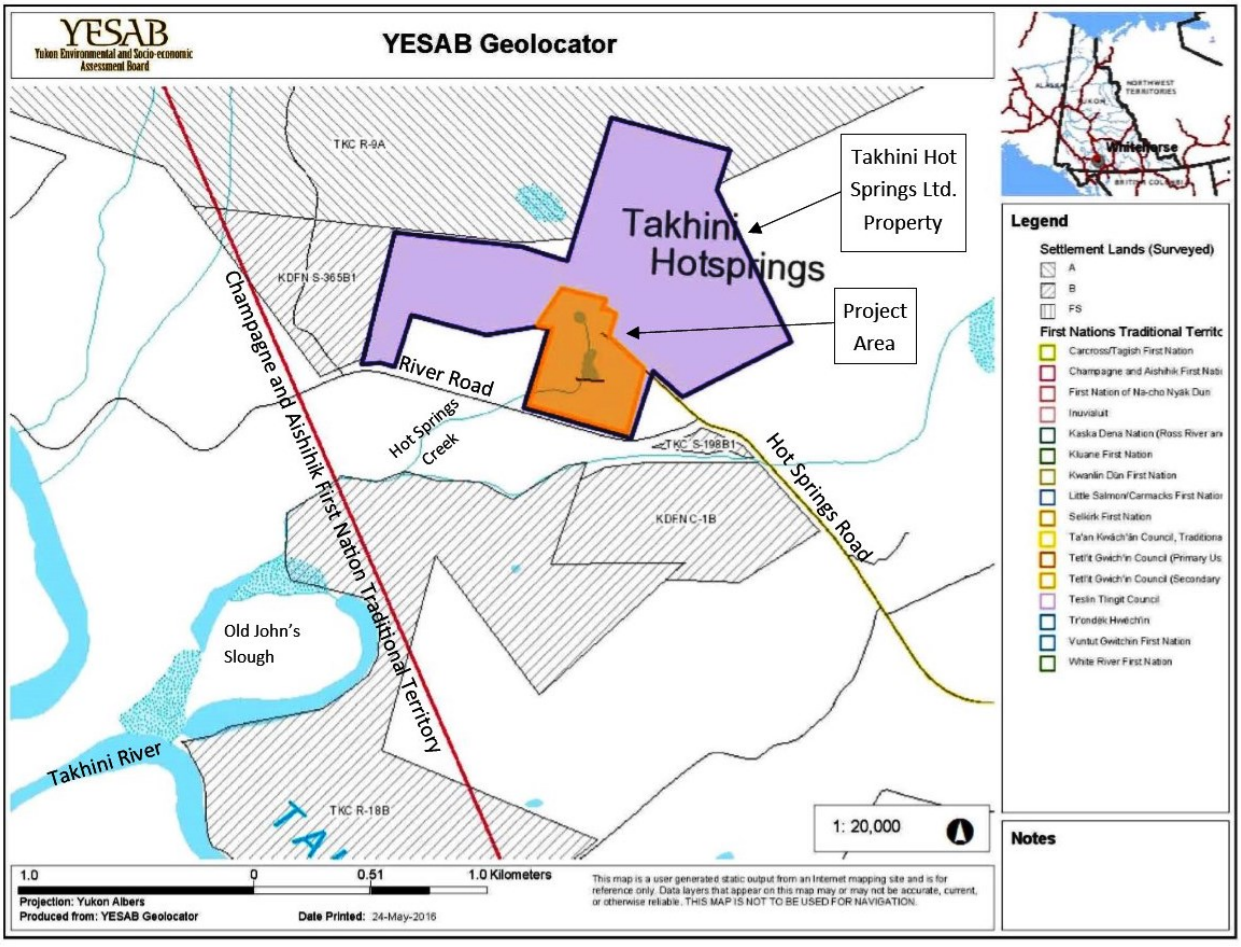

Figure 2: Project area and First Nations Settlement Lands and Traditional Territory.[3]

[3] YESAB Geolocator

2.3 Project Scope and Details

The Proponent is applying for a water licence renewal to operate and to renovate its hot springs facility, with a maximum water use rate of 560 m^3 per day from the hot springs source. The new facility will consist of public, rental, and Nordic spa pool areas (six hot pools, total volume 60 m^3), and also include three cold-water plunge pools, a steam room and sauna, as well as a new heat exchange system. The existing evaporation pond (approx. 0.8 ha, 16 000 m^3) will be maintained. The Proponent will build an additional pond (approx. 0.4 ha, 4 000 m^3) and water discharge stream (following the original channel for approx. 150 m) to provide for additional chlorine evaporation and water treatment. Figure 3 shows the existing site layout; Figures 4 and 5 show the proposed site layouts.

The water from the hot springs flows from the natural source. The flow is piped into the new hot pools, fed by gravity flow. The water intake from the two already drilled water wells is used in the summer-only warm water pool. Screening prevents debris from entering the pipeline from the hot springs. No pumps are required for water feed.

As with the existing facility, water will be piped from the pools to the existing pond (pond 1) in valley 1, where chlorine evaporates and sediment settles out, before it is discharged. With the new facility, it will be discharged to pond 2 in valley 3, which will act as a second “finishing” pond, before it is released to its historic creek bed off the property.

In addition, the Proponent will create a series of small ponds with cascading flow and cattails through valley 2, which follows the historic route of the hot springs flow, and enter into pond 2 in valley 3. These small ponds will also serve to remove chlorine and sediment before it enters the second “finishing” pond before being released off the property. The new stream discharge into these ponds in valley 2 will first go directly from the hot pools via drain lines into a surge tank inside the planned future greenhouse. Then from the greenhouse, the cooled water will travel via gravity to the beginning of the ponds in valley 2.

The Proponent will have the ability to divert the discharge water from the pools to either these small ponds in valley 2, or through pond 1 in valley 1.

The Proponent will install a septic system, and also recycle grey water for landscaping use (winter skating area).

The proposal indicates there will be no reduction in flow; the Project will utilize water from the hot springs source at 6.5 L/s and will discharge water from the second “evaporation” pond (pond 2, see Figure 5) at 6.5 L/s. The Proponent notes that with an additional pool utilizing water from two drilled wells on-site in the summer there will be a net additional flow in the summer period of just over 3 L/s, for a total of approximately 10 L/s, and that this additional discharge is similar to spring freshet.

The Proponent proposes to drain pond 1 as part of the dam remediation work, and will divert the flow through the newly constructed small ponds in valley 2, which will discharge into pond 2 (valley 3) and then off the property in the same location and in the same quantity as historically has been the case.

Construction activities are proposed to occur from 2016 through the summer of 2018, with operations and monitoring activities as required for the life of the pool facility (approx. 50 years). The existing facility will remain open until the new facility is completed, at which point it will be decommissioned. Work areas will be fenced off from the public. Work crews will stay in the campground and hostel facilities; no work camp is required.

2.3.1 Project Activities:

- Watercourse training
- Construct new pools
- Construct (chlorine) evaporation pond
- Upgrade existing evaporation pond
- Create stream for discharge water
- Create stream crossing (foot path)
- Install underground piping, culverts
- Reinforce existing dam
- Clear and grub vegetation, excavate ground
- Dig trenches, move, grade and slope earth
- Stockpile organics for reclamation
- Deposit chlorine in water
- Install new heat exchanger
- Install septic system
- Use heavy equipment
- Create new access roadway
- Develop new parking area
- Install fencing
- Landscaping
- Natural re-vegetation
- Decommission existing facility

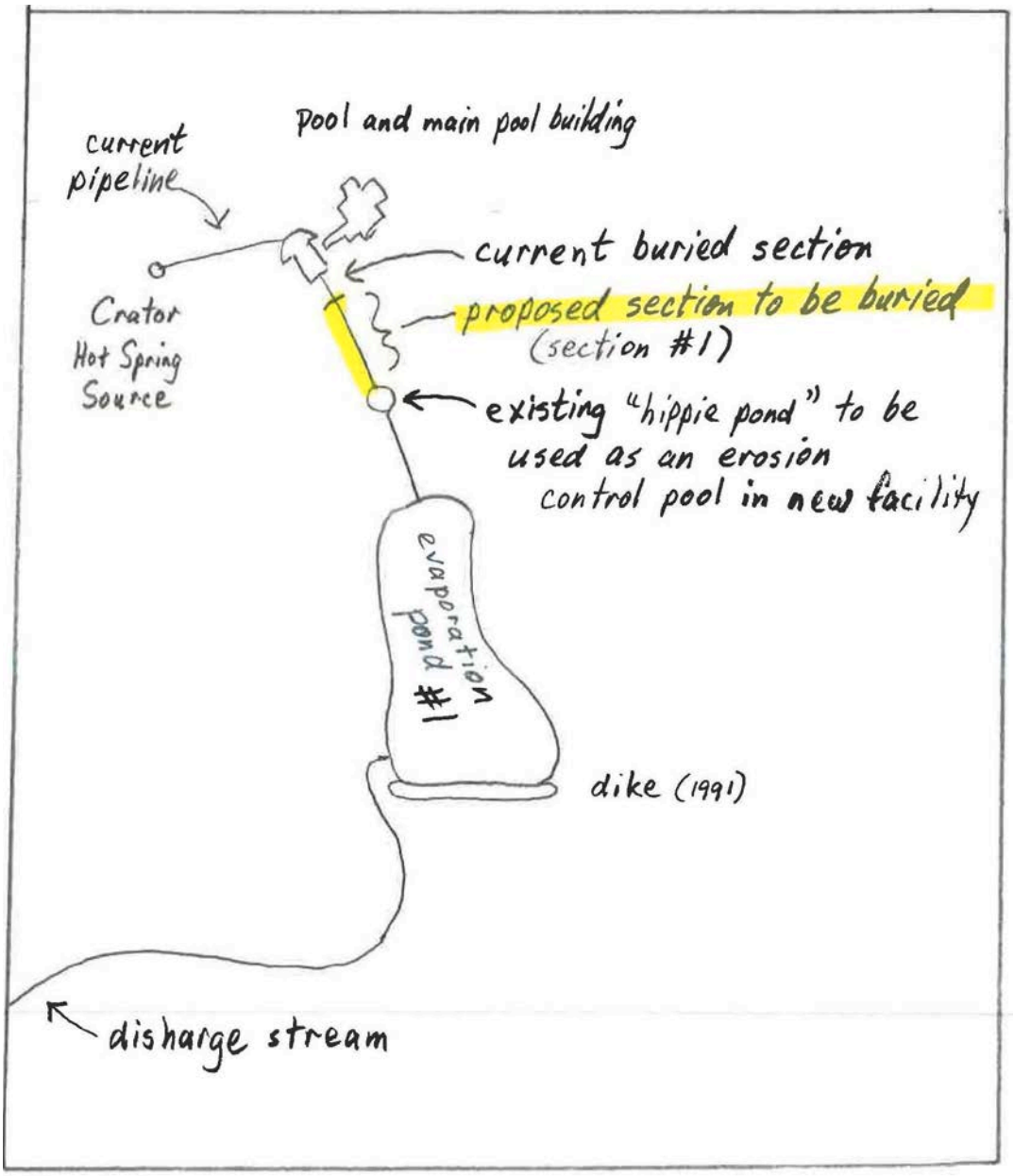

Figure 3: Existing site layout.[4]

[4] YOR 2016-0064-004-1

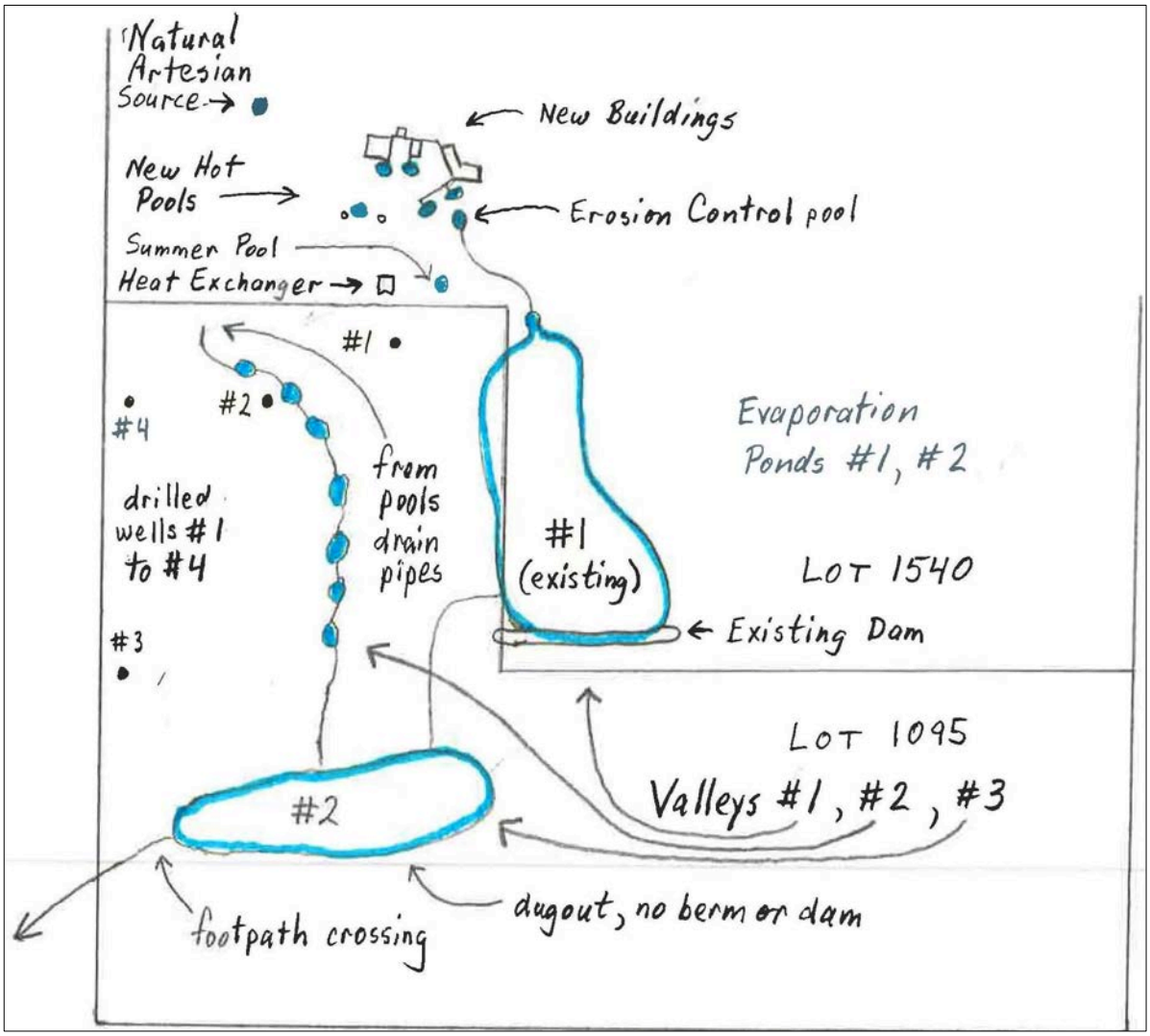

Figure 4: Proposed project layout showing ponds 1 and 2, and valleys 1 to 3.[5]

[5] YOR 2016-0064-004-1

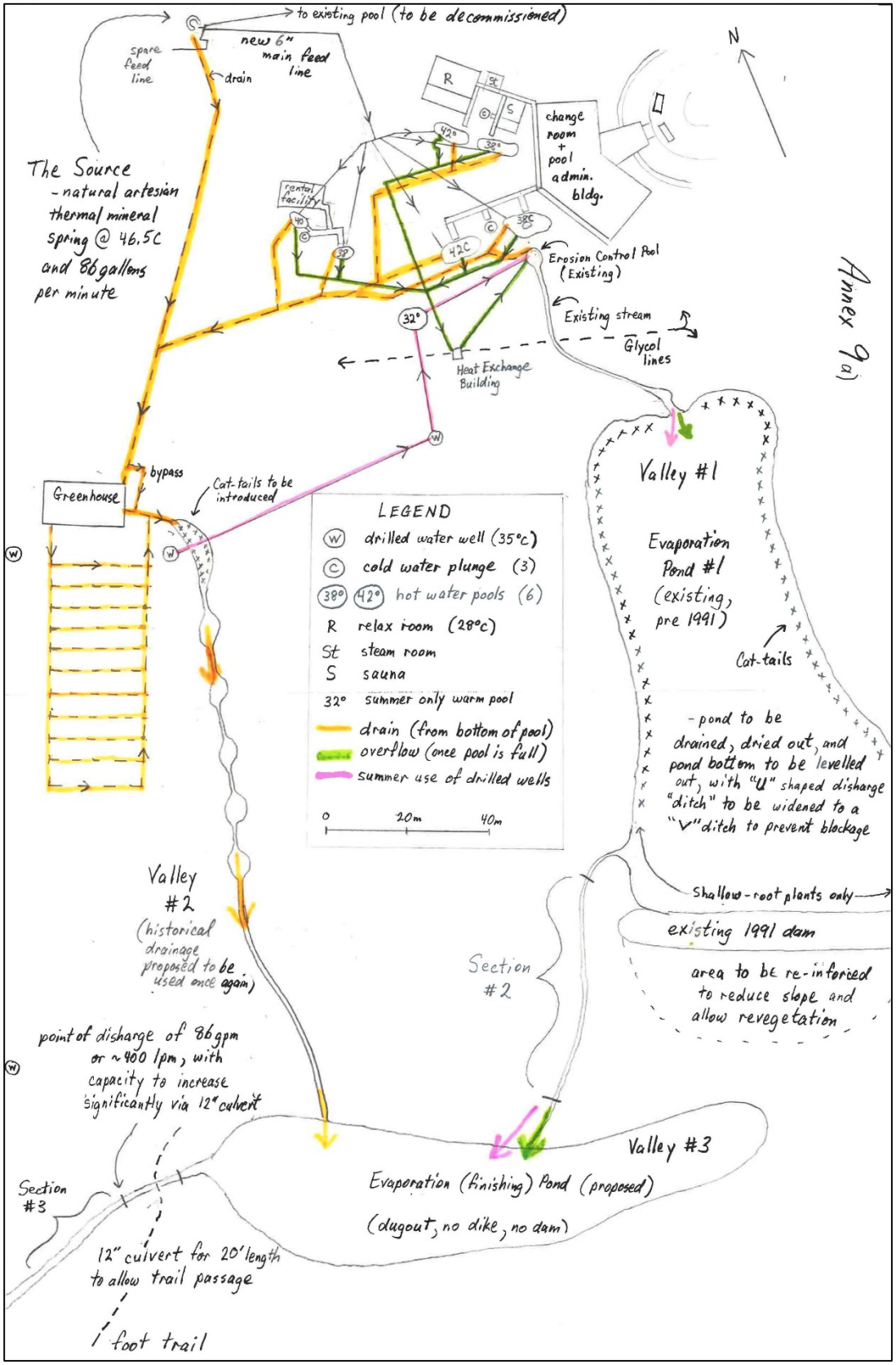

Figure 5: Detailed site layout of the new facility.[6]

3.0 ENVIRONMENTAL AND SOCIO-ECONOMIC SETTING

3.1 Bio-physical Environment

The Proponent describes the geology of the area as consisting of buttes, hidden valleys, cliffs and rock outcroppings, and emphasizes the lack of permafrost on the property.[7] A report prepared by Yucan Environmental Planning for a previous project assessment in the area notes the surface materials in the area are largely glaciolacustrine silts. The report indicates the lack of groundwater near the surface in the frost zone has prevented the formation of ice rich silts and ice bodies beneath the Takhini Hot Springs Road.[8] The Proponent notes that the valley bottom consists of organic materials less than 0.5 m thick and underlain with sand and silt, with less than 10 percent clay. The Proponent also indicates that in drilling three wells on-site, tight soils (i.e., fine-textured, low permeability) were consistently observed to bedrock.

As shown in Figure 2, the creek from the hot springs on the Proponent's property (also known as Hot Springs Creek) flows southwest to the Takhini River oxbow, known as Old John's Slough. Before arriving at the Takhini River, another unnamed stream, which appears to originate at a lake approximately 4 km to the northeast, flows into it. This other unnamed stream travels through the Yukon Wildlife Preserve, past agricultural and residential land, and underneath the Hot Springs Road, before joining the Hot Springs Creek approximately 500 m north of the oxbow; it does not cross the Proponent's property.

The Takhini River flows to the east into the Yukon River, and supports numerous fish species, including Chinook salmon, Chum salmon, whitefish, burbot, inconnu, slimy sculpin, least cisco, longnose sucker, grayling, chub, round whitefish, lake trout, and northern pike. The Proponent indicates the Hot Springs Creek, which originates from ground on the property, is not fish bearing, and there is no evidence to suggest that it is.

The Takhini River and Hot Springs Road area supports a diversity of wildlife species, including elk, deer, moose, bear, sheep, and bats, as well as aquatic and avian species, and frogs. The Hot Springs Road Local Area Plan contains information on wildlife in the area, including a ranking of wildlife values based on vegetation types and watercourses. The Plan identifies the area south of the Project, along the Hot Springs Creek to Old John's Slough, as having high wildlife value and as a wildlife corridor of local importance. The Plan defines areas of high value as areas that may be used during critical life stages (e.g. shorebird nesting sites or waterfowl staging areas), provide important seasonal foraging opportunities (e.g. herbaceous vegetation in the spring and berries in the fall), or form important travel corridors between developed areas. In general, riparian habitats, shallow water bodies, wetlands, shrub and grassy meadows, and mature, highly structured forests provide the highest wildlife values within the Takhini Hot Springs area. Old John's Slough consists of wetland habitat and is an important spring and fall waterfowl staging area. The YESAB Geolocator does not identify any wildlife key areas overlapping with the project area.

A forest fire in 1958 destroyed most of the vegetation in the area. Consequently, the forest on-site is primarily poplar, pine and willow, with spruce beginning to appear, and not more than fifty years of age. The Proponent notes the remaining deadwood is now unusable as firewood and is left to decompose and provide habitat.

[6] YOR 2016-0064-004-1
[7] YOR 2016-0064-003-2
[8] YOR 2012-0016-002-1

Cattails (*Typha spp.*) line the existing pond 1 (and will be introduced to the proposed future ponds). There is a large patch on-site of Canada thistle (*Cirsium arvense*), a tenacious invasive species in Yukon, and one of the most invasive species in North America. The Proponent indicates they have a thistle eradication program, as well as an aggressive clover removal program.

3.2 Socio-economic Environment

The Takhini Hot Springs overlaps with the Traditional Territories of Kwanlin Dün First Nation (KDFN) and Ta'an Kwäch'än Council (TKC), and is adjacent or close to Settlement Land parcels TKC R9-A, TKC S-198B1, TKC R-18B, KDFN S-365B1 and KDFN C-1B. As noted, the hot springs creek flows southwest along the boundary of TKC R-18B towards the Takhini River, where it crosses the boundary into the Traditional Territory of the Champagne and Aishihik First Nation before emptying into the Takhini River through Old John's Slough (Figure 2).

The Takhini Hot Springs Road Local Area Plan[9] indicates that Archeological studies show evidence that First Nations have lived along the Takhini River over the past 8 000 years. In comments submitted to the Designated Office during the public comment period, TKC notes the Takhini Hot Springs area is of significant value from a traditional, cultural and socio-economic perspective. While there are no known historic or archeological sites within the project area, TKC notes there may be areas with elevated potential for archeological and cultural resources. [10]

The Proponent notes that in 1907, William Puckett registered the title for the Hot Springs property. The Takhini Hot Springs Road Local Area Plan indicates that although First Nations would have known about the hot springs for millennia, European settlers first recorded use of the springs in the mid-1880s. Access to the site, originally by boat, has changed throughout the 1900s with the construction of the Alaska Highway, North Klondike Highway, and Hot Springs Road. The construction of these roads enabled residential development in the area.

The Project occurs within the range of the Hot Springs Road Local Area Plan (2002) and the Hot Springs Road Development Area Regulations (1996). There are several agriculture, rural residential and commercial properties situated along the length of the Takhini Hot Springs Road. Residential clusters occur in the Pilot Mountain Subdivision, Gruberville and areas near the Wildlife Preserve and the Takhini Hot Springs. Agricultural, rural residential and rural residential mixed-use parcels surround the Takhini Hot Springs property (Figure 6). The Takhini Hot Springs Ltd., which operates on the Takhini Hot Springs property, has title to ten surrounding parcels that are zoned commercial mixed-use tourism accommodation. In addition to the Takhini Hot Springs Ltd., Café Balsam operates on-site. Other businesses in the area include the National Outdoor Leadership School (NOLS), Bean North Coffee Roasting Company Ltd., the Yukon Wildlife Preserve, Takhini River Lodge, and Rivendell Farms.

There are ten other water/land users holding Water Use Licences withdrawing water from the Takhini River for agricultural purposes. One water user provided comments to the Designated Office indicating he has a water licence for irrigation from the pond area formed by the oxbow around Old John's Slough.[11]

A well-developed network of trails provide for multi-use year round recreation in the area around the Takhini Hot Springs, used for walking, cross-country skiing, biking, skijoring, and horseback riding. There

[9] http://www.env.gov.yk.ca/publications-maps/documents/Yukon_Freshwater_Fishes_2012.pdf
[10] YOR 2016-0064-016-2, -025-1
[11] YOR 2016-0064-021-1

are trails on and leading off the Takhini Hot Springs property, and the Proponent runs a hostel and campground on-site. The Takhini Hot Springs pools are open year-round. The Proponent estimates the Hot Springs attracts approximately 50 000 pool visits per year, with an additional 5 000 visits to the other facilities on-site (NOLS, café, campground/hostel) besides the pools.

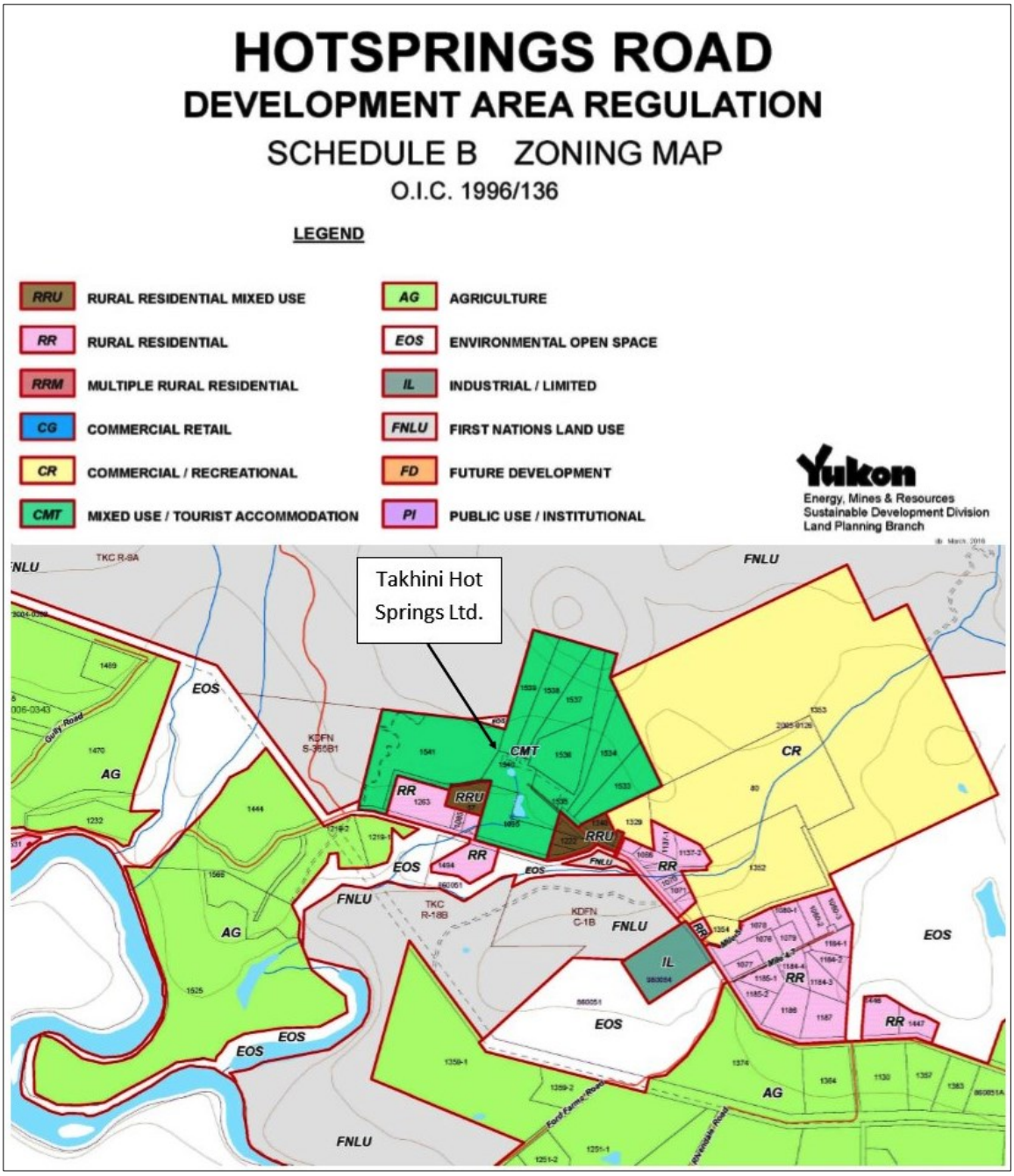

Figure 6: Zoning surrounding the Project. The Proponent has title to the 10 mixed use/tourist accommodation parcels in dark green.[12]

[12] Modified from http://www.emr.gov.yk.ca/landplanning/Z_Hotsprings_Road_DAR_March_2016.pdf

4.0 SCOPE OF THE ASSESSMENT

The scope of the assessment identifies the matters considered in an assessment. It is determined by considering the activities described in the scope of the Project (identified in Section 2.3) and, based on consideration of the matters set out in s. 42(1) of YESAA, identifying the valued environmental and socio-economic components that may be affected by project activities. Views and information submitted during the assessment help to identify values and potential effects of the Project to these values.

4.1 Views and Information Submitted

The Project was available for public comment from April 19, 2016 through May 17, 2016 (the original deadline was May 3, 2016; an extension was granted upon TKC's request). The Designated Office received comments from the Ta'an Kwäch'än Council, Government of Yukon, and Environment and Climate Change Canada, as well as three submissions from members of the public. The intention of the summary below is to provide an overview of common or primary concerns from each submission. It does not capture every comment, or all points within each individual comment. All comments are posted in their entirety on the YOR.

Following the public comment period, the Proponent responded to each of the submissions; the responses are available on the YOR.[13]

4.1.1 Government of Yukon[14]

The Department of Environment (ENV) commented on the biodiversity of the project area, noting ENV is interested in the prospect of studying the existing pond 1 (Figures 3, 4 and 5) during the drainage and dredging stage of the Project due to the variety of exotic and other species in the ecosystem. ENV requested the Proponent contact ENV and the Yukon Conservation Data Centre. In addition, ENV commented on the presence of Canada thistle on the property, and encouraged the Proponent to contact the Yukon Invasive Species Council for information and advice on the eradication of this invasive species. These comments are considered in Section 4.4.3.

The Department of Highways and Public Works indicated it has no concerns with the Project.

The Department of Health and Social Services indicated the Proponent should contact Environmental Health Services regarding the installation of a new septic system and grey water system to ensure the new pools are compliant with standards set out in the *Public Pool Regulation* and the *Public Health Act*.

4.1.2 Members of the Public[15]

The Designated Office received three comment submissions from members of the public. These submissions identified valued environmental and socio-economic components, which the Project could potentially affect, as well as various concerns with the proposal itself. A summary of the values identified in the comment submissions are below.

[13] YOR 2016-0064-028-1
[14] YOR 2016-0064-020-1
[15] YOR 2016-0064-021-1, -022-1, -023-1

The first submission indicated concerns regarding any potential reduction in flow to the Hot Springs drainage, as users and waterfowl downstream of the Project depend on a maintained flow.[16] These concerns are considered in Section 4.4.1 (Water Quantity).

The second submission identified a number of valued components potentially affected by project activities. Specifically, the comment indicated wildlife (including avian and amphibian species) is a valued component potentially affected by vegetation clearing, and highlighted potential effects to water quality from the use of chlorine. In addition, the comment noted the proposal includes a foot trail crossing the creek, and expressed concerns regarding the drainage of the pond for dam remediation work and potential effects on the stream flow and downstream users.[17] Concerns are considered in Section 4.4.4 (Birds), Section 5.0 (Water Quality), and Section 4.4.1 (Water Quantity).

The third comment submission identified concerns with the proposal as submitted to YESAB, and posed questions regarding the access road, impacts on local area residents, the existing dam on pond 1 (see Figures 4 and 5), and water quality.[18] The Proponent provided a response to the question regarding the access road. The other concerns are considered in Section 4.4.5 (Other Land Users) and Section 5.0 (Water Quality).

4.1.3 Environment and Climate Change Canada[19]

Environment and Climate Change Canada (ECCC) provided comments regarding the protection of migratory birds and species at risk, acknowledging the Proponent's commitment not to conduct activities within the wetland area during the core-breeding period. ECCC reminds the Proponent that Section 6(a) of the *Migratory Bird Regulations* prohibits the disturbance, destruction or taking of a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird species listed under the *Migratory Birds Convention Act (MBCA)*. As well, Section 5.1 of the *MBCA* prohibits persons from depositing substances harmful to migratory birds in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or area. In addition, ECCC reminded the Proponent that Section 36(3) of the *Fisheries Act* also prohibits the discharge of a deleterious substance into fish-bearing water. ECCC provided recommendations regarding vegetation clearing and fuel management. ECCC's comments are considered in Section 4.4.4 (Birds) and Section 5.0 (Water Quality).

4.1.4 Ta'an Kwäch'än Council[20]

Ta'an Kwäch'än Council (TKC) requested an extension to the public comment period, which was granted, noting that TKC Settlement Land parcels may be affected by the Project. In the comment submission, TKC identified cultural resources, water, and access to Settlement Land as valued components potentially affected by project activities, and provided suggested mitigations, as well as recommendations regarding other general concerns.

TKC indicated there are no known historic sites or archeological sites within the project area, however, the Takhini Hot Springs area may contain areas with elevated potential for archeological and cultural resources. TKC requested that in the event that heritage resources are encountered, the Proponent contact the TKC Heritage Department at (867) 668-3613, indicating that assistance in identifying heritage

[16] YOR 2016-0064-021-1
[17] YOR 2016-0064-022-1
[18] YOR 2016-0064-023-1
[19] YOR 2016-0064-024-1
[20] YOR 2016-0064-016-2, -025-1

resources is available through the Ta'an Kwach'an Council Heritage Department, as well as through the Government of Yukon's Heritage Resources Unit at (867) 667-5386. These comments are considered in Section 4.4.2 (Heritage Resources).

TKC noted the Project has the potential to adversely affect water quality and interfere with TKC use and enjoyment of their land, particularly as the Project occurs upstream of its Settlement Land, and recommended mitigations regarding erosion and sedimentation. Concerning access to the Settlement Land parcels, TKC noted that Settlement Land R-9A and R-188 are particularly important to TKC, as citizens use both parcels to conduct traditional/subsistence activities. These comments are considered in Section 5.0 (Water Quality).

4.2 Consideration of Significance

In order to mitigate a potential adverse effect, the Designated Office must first find significance. In addressing what may constitute a "significant" adverse effect, the Designated Office considered the following factors:

Magnitude: The intensity of an effect or extent of change, where "effect" is defined as the change from baseline conditions resulting from an activity.

Probability: The likelihood that an adverse effect will occur.

Geographic Extent: The geographic extent of project effects (e.g. the distance from the project and/or the area in which effects are detectable). The geographic extent of effects can be local or regional.

Duration and Frequency: The length of time the effect lasts and how often the effect occurs. The duration of an effect can be short term or long term. The frequency of an effect can be frequent or infrequent.

Reversibility: The degree to which the effect is reversible. Effects can be reversible or permanent. Reversible effects may have lower impacts than irreversible or permanent effects.

Context: The particular environmental and/or socio-economic context within which the project occurs. Context is related to the importance of valued environmental and socio-economic components, their resiliency to potential effects and the extent to which those valued components may successfully adapt to change.

4.3 Consideration of Cumulative Effects

With regards to cumulative effects, subsection 42(1)(d) of the *Yukon Environmental and Socio-economic Assessment Act* (YESAA) instructs Designated Offices to consider:

42(1)(d) the significance of any adverse cumulative environmental or socio-economic effects that have occurred or might occur in connection with the project or existing project in combination with the effects of other projects for which proposals have been submitted under subsection 50(1) or any activities that have been carried out, are being carried out or are likely to be carried out in or outside Yukon;

(d)(1) any studies or research undertaken under subsection 112(1) that are relevant to the project or existing project;

(d)(2) the need for effects monitoring.

In the situation where the Designated Office determined that there would be no residual effects of the proposed project on a specific valued component then a cumulative effects assessment (for that valued component) is not necessary.

4.4 Other Matters Considered

The Designated Office considered the following matters in the assessment; these matters were raised as potential issues during the public comment period. For the reasons outlined in each section, these matters were considered not to be valued environmental or socio-economic components adversely affected by the Project, and are not included in the significance determination.

4.4.1 Water Quantity

The Designated Office received several comments expressing concern about any potential changes to the rate of flow of the Hot Springs drainage once leaving the Proponent's property. As discussed in Section 2.3, the proposal indicates there will be no reduction in flow. Even with the temporary drainage of one of the ponds, the Project will not interrupt the water flow or reduce water quantity; therefore, this report does not consider water quantity further. Section 5.2.1 discusses the dam remediation activities; Section 5.3.1.2 discusses the potential failure of the dam.

4.4.2 Heritage Resources

As discussed in Section 4.1.4, Ta'an Kwäch'än Council (TKC) provided comments regarding heritage resources, historic sites and archeological sites, requesting to be contacted in the event that heritage resources are encountered. The Proponent responded to these concerns noting them and committing to having contact information for the TKC Heritage Department on-site while undertaking all excavation work.

The Government of Yukon Tourism-Heritage Branch did not submit comments on the Project. The Designated Office notes the relevant legislation (*Yukon Historic Resources Act, Archaeological Sites Regulations*) contain adequate provisions to ensure that damage or disturbance of historic or heritage resources do not occur. These include operational steps to mark and protect discovered resources from further disturbance, as well as the requirement for reporting finds to the Government of Yukon Heritage Resources Unit. The Designated Office does not consider Heritage Resources further in this report.

4.4.3 Introduced and Invasive Species

As noted in Section 3.1, there is a large patch of Canada thistle (*Cirsium arvense*) on the Takhini Hot Springs property. The Proponent indicates they have a thistle eradication program, as well as an aggressive clover removal program. In comments to the Designated Office, Environment Yukon (ENV) indicates the proposed project provides an opportunity to eradicate the patch, due to the clonal nature of the species. ENV encourages the Proponent contact the Yukon Invasive Species Council or Government of Yukon for information and advice on the eradication of invasive species in the project area. The Proponent notes they have already taken significant steps to remove the Canada thistle from the property and will likely have the population eradicated by mid-summer 2016. The Proponent commits to monitoring the site on an on-going basis to ensure the eradication was successful. It is unlikely that this species will spread within the site or to other sites. Therefore, this report does not consider invasive species further.

In addition, goldfish have been introduced to the pond (likely by children). Goldfish are native to Asia but have been introduced to Yukon at the Takhini Hot Springs as well as near the Atlin Warm Springs. The

Proponent indicates the permanent removal of the on-site population will occur during project construction.

4.4.4 Birds

The Designated Office received three comments during the public comment period that identified concerns regarding the effects to birds from vegetation clearing. In Yukon, the core-breeding season for most birds extends through spring and summer from May 1 to August 15. This overlap may result in the incidental destruction of bird habitat and the displacement of birds from nesting habitat, as well as the loss or damage of bird nests and the destruction of eggs. The Proponent commits not to conduct activities near the wetland (both the pond and the discharge stream) during the May to mid-August season. The Proponent also notes that the staggered construction times of the ponds will result in a functioning pond always available for waterfowl and/or other birds.

Environment and Climate Change Canada (ECCC) reminded the Proponent that Section 6 of the *Migratory Birds Regulations* prohibits the disturbance, destruction or taking of a nest, nest shelter of a migratory species listed under the *Migratory Birds Convention Act* (MBCA). Additional information on reducing risks to and avoiding incidental take of migratory bird nests and eggs can be found online at ECCC's website. Section 5.1 of the MBCA prohibits depositing harmful substances in waters; Section 5.3 of this Evaluation Report addresses effects from deleterious substances to water quality, effects that are applicable to birds, as well. It is the Proponent's responsibility to managed activities in compliance with the Act and Regulations.

4.4.5 Other Land Users

The Project is occurring entirely on privately owned land; however, the Designated Office received comments on the Project expressing concern regarding possible effects to the users of neighbouring properties. Construction activities are anticipated to occur over three years. During this time, there may be noise and dust generated from equipment on-site. As well, comments raised concerns regarding access.

In regards to noise, the Proponent provided mitigations to structure heavy equipment work to minimize the movement of materials, and schedule work in batches to maximize efficient use of machinery. While the Proponent notes much work is in the off-season to minimize noise to existing Takhini "clients," the Designated Office considers these mitigations as applying to all surrounding land users. As well, the Proponent identifies the treed areas act as buffers for noise, and that the new parking area and roadway will be quieter than the existing one, due to slower speeds and vegetative buffer. The Designated Office considers these mitigations sufficient to address noise concerns where possible, and is of the opinion that effects to surrounding land users from noise are limited and not significant in nature. Similarly, the Designated Office is of the opinion that given the limited scope of construction activities, dust will not be a significant issue. In addition, concerns relating to air quality are addressed under the Yukon's *Environment Act*.

An alternate access to the property will not be required; as such, other users of the Hot Springs Road should not be affected. The Proponent does require a permit from Government of Yukon Department of Highways and Public Works to construct a roundabout at the terminus of the Hot Springs Road, on the Takhini Hot Springs Ltd. property. The Proponent has committed to contacting Ta'an Kwäch'än Council (TKC) regarding re-configured access through the project area to TKC Settlement Land, and will provide TKC will access through locked gates.

Concerns regarding water quality and quantity as related to other land users are discussed in Sections 4.4.1 and 5.0 of this report.

4.5 Valued Environmental and Socio-economic Components

As noted, the Designated Office received input on various valued components which commenters felt could potentially be affected by the Project, several of which are discussed in Section 4.4. The Designated Office also received comments on other aspects of the Project (e.g., the use of chlorine, possible sedimentation from equipment, possible dam failures, effects to downstream water users, etc.) which can be included in a consideration of effects to water quality. The Designated Office has identified water quality as being the specific valued component that will be affected by the Project. The Designated Office's determination of whether the adverse effects to water quality will or are likely to be *significant* follows in Section 5.0 of this report.

PART B. ASSESSMENT AND REASONS FOR RECOMMENDATION

Part B of this evaluation report presents the effects assessment of the Project on the valued environmental and socio-economic component identified in Section 4.0. An overview is provided, followed by the effects characterization analysis. Where relevant, measures to reduce significant adverse effects of the Project on the valued component are identified. The effects characterization ends with a conclusion on the key findings of the assessment.

5.0 WATER QUALITY

5.1 Overview

Several project activities have the potential to affect water quality of the Hot Springs Creek, which enters the Takhini River downstream of the Project. The use of heavy equipment along the watercourse during construction, the use of chlorine in the pools, the installation of a septic system, and regular vehicle use of the nearby parking lot all have the potential to deposit a deleterious substance into the water and/or release sediment into the water. These effects have the potential to impact downstream water quality, wetland habitat, and water users. The Designated Office has considered the following potential effects to water quality:

- Sedimentation of the watercourse
- Depositing a deleterious substance to water

The Whitehorse Designated Office has determined that the Project will not result in significant adverse effects to water quality. The rationale for this determination is provided in the following sections.

5.2 Project Effects – Sedimentation of the Watercourse

5.2.1 Effects Characterization

Clearing vegetation, construction of the new pools and ponds, and the use of equipment may result in adverse effects to soils, such as compaction and erosion, leading to the sedimentation of the watercourse. Such impacts can alter surface drainage patterns through rutting, gouging and channelling of surface water, which can result in alterations to site ecology and may impede regeneration of the area. As a result, sedimentation of the watercourse may occur (e.g., mobilized sediments may enter the watercourse via surface runoff during precipitation events, or banks may become unstable) with subsequent impacts to water quality and, potentially, aquatic resources downstream. In addition, the use of heavy equipment to move earth in and around the watercourse can contribute to sediments entering the creek.

Large amounts of sediment can reduce the storage capacity of reservoirs, alter wetland areas, degrade the quality of water, and affect aquatic resources by smothering fish, aquatic insects and oxygen producing plants. Sedimentation of surface waters can clog stream channels with sediment. The Proponent proposes to modify the existing discharge channel from pond 1 from a “U” shaped channel to a “V” shaped channel, which will be less likely to clog, reducing this potential affect from sedimentation. Further details of this discharge channel are available in the proposal.

One of the most effective measures for erosion control and regeneration the degraded former soil is the establishment of plant covers. A good root system reinforces the soil and provides bank stabilization, reducing the erosive effects of wind, rain, gravity and flowing water. Cattails are established on-site, and help to prevent shoreline erosion. The Proponent provides details of shoreline protection including allowing natural vegetation to the water's edge, and notes the ponds are not subject to wave action from wind (leading to erosion) as they sit in valleys, with north-south orientation and protection from surrounding forest. The Designated Office considers the likelihood and magnitude of effects from erosion and sedimentation to be low.

As shown in Figure 5, the Proponent proposes to install a 30 cm culvert (6 m long) at the outlet below the last settling pond to connect the walking trail. The Proponent indicates that installation of the culvert will include rockwork and potentially geotextile fabric to prevent erosion. The area will be bermed to allow for freeboard. The Proponent also discusses putting a small footbridge across the stream above pond 1, connecting the walking trail along the stream bank. Foot traffic crossing over the creek may result in minor amounts of sediment entering the water. However, the Designated Office does not consider amounts significant, particularly in comparison to a watercourse crossing for a vehicle (a ford crossing often used in placer mining, for example).

As discussed in Section 4.1.1, the Proponent will divert the discharge water from the pools away from pond 1 to the newly constructed stream in valley 2, allowing the remaining water in pond 1 to drain out in October. The following March/April, the Proponent will grub the bottom of the pond 1 valley, use the excavated clay silt materials to reinforce the pond 1 dam, and apply fill materials from the excavation of the finishing pond in valley 3 to the bottom of pond 1. The Proponent will berm the backside of the dam to strengthen it and create a gentle slope, and add organics from grubbing pond 1 to revegetate the backside of the dam. The Proponent will add riprap to the side of the dam in contact with the water. A qualified engineer must be inspect and approve the dam prior to receiving a water licence. Section 5.3.1.2 discusses potential failure of the dam. It is unlikely the dam will contribute significant amounts of sediment to the watercourse; the Proponent's remediation plans should reduce any potential effects (e.g. erosion, failure, etc.) on the receiving environment.

Inspection and maintenance are important components of maintaining erosion and sedimentation control measures; the Designated Office encourages the Proponent to monitor sediment loads on an on-going basis during operations. The proposal also identifies proposed monitoring and inspection procedures followed during a temporary or permanent abandonment of the facility, and includes a conceptual decommissioning plan, which includes draining the ponds and enabling site reclamation and revegation.

5.2.2 Relevant Proponent Commitments

The Designated Office notes that much of the project design considers effects from sedimentation, and incorporates mitigative measures as elements of the planning and design. For example, the creation of a second "finishing" pond for chlorine removal also acts as a second settling pond, and cattails will be managed to help clean water in the ponds and streams, and act as bank stabilizers. Numerous various other proposed design elements, including freeboard heights, commitments to monitor sites and enabling natural revegetation are included in the proposal.

These elements are considered as proponent commitments which mitigate specific adverse effects of the Project and are instrumental in the Designated Office's significance determination. These commitments demonstrate the Proponent's efforts under s. 42(1) of YESAA to consider adverse project effects and mitigation measures.

5.2.3 Relevant Legislation

The Whitehorse Designated Office considered the following legislative requirements. The exclusion of other legislation listed here does not preclude compliance; rather, the Whitehorse Designated Office reviewed this specific legislation because of its direct relevance to the environment.

- *Fisheries Act*
- *Environment Act*
- *Waters Act*
- *Water Regulation*

5.2.4 Significance Determination

Project activities have the potential to affect water quality through the introduction of sediment to the watercourse, which is used for irrigation by downstream users, and flows into the Takhini River. However, as noted in Sections 5.2.1 and 5.2.2, the Designated Office acknowledges the project design to adequately consider and address erosion and sedimentation such that the likelihood of a large amount of sediment entering the watercourse, or sediment entering the watercourse on a regular basis, is low. Adverse effects will not be significant in nature.

The Designated Office reiterates the importance of ongoing monitoring and maintenance of erosion and sedimentation control measures. The Designated Office also encourages the Proponent to review Environment Yukon's Best Management Practices for Works Affecting Water in Yukon, available at: http://www.env.gov.yk.ca/publications-maps/documents/bestpractes_water.pdf.

The Whitehorse Designated Office has determined that the Project will not have significant adverse environmental effects to environmental quality from the sedimentation of the watercourse. No further mitigation is required.

5.3 Project Effects – Depositing a Deleterious Substance to Water

5.3.1 Effects Characterization

5.3.1.1 Hydrocarbons

Project activities require the use of heavy equipment. Associated deleterious substances may include diesel fuel, gasoline, hydraulic fluids, coolants, lubricants, solvents and cleansers. Diesel or gasoline may also be used for a back-up generator at the new facility. As well, the Project involves the use of glycol as an anti-freeze in the heating lines of the heat exchanger. Spills, leaks, accidents or malfunctions during equipment refuelling or operation and use of heavy equipment during construction, as well as during regular facility operational use, could result in the release of these substances into the environment, leading to contamination of terrestrial or aquatic ecosystems if steps are not taken to immediately clean up the spill. In particular, since the Project occurs on a tributary of the Takhini River and upstream of a wetland (Figure 2), water quality and aquatic ecosystems and species are especially vulnerable from spills.

Contamination of the surrounding environment by deleterious substances such as chemical contaminants can affect the productivity of terrestrial and aquatic habitats; harm vegetation, fish and wildlife including migratory birds; pollute water sources; and cause injury to domestic and wild animals as well as humans if

encountered. Contamination may affect the long-term survival of organisms or populations within the area. Bioaccumulation of chemical contaminants can result in effects that may take a long time to be observed and affect organisms throughout the food web including humans. In addition, the long-term survival of organisms or populations within the area may be adversely affected by sub-lethal concentrations of hydrocarbons.

In comments submitted to the Designated Office, Environment and Climate Change Canada (ECCC) highlighted Section 36(3) of the *Fisheries Act*, which states: "No personal shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish." ECCC also urged the Proponent to be cognizant of how equipment, fuel, and materials are stored and used along the waterway to ensure "that hydrocarbons, chemicals and/or waste materials are prevented from entering surface waters either directly or indirectly."[21] ECCC also noted that spill contingency plans should address worst-case scenario spill situations given the connectivity to the Takhini and Yukon River.

Applicable legislation provides specific measures and operational constraints that mitigate for the contamination of the environment. These include measures for the storage, handling and disposal of fuel and special wastes. Further, the *Environment Act* stipulates that in the event of a spill, there is a duty to mitigate for adverse effects. The Proponent's Emergency/Spill Response Plan indicates a contractor with spill prevention procedures, materials and equipment is responsible for the work. Adherence to a spill management plan will reduce the likelihood and magnitude of adverse effects. In addition, the Proponent indicates the pressure gauges of the glycol lines will be checked daily to ensure glycol leaks are detected, reducing the probability and magnitude of effects from glycol leaks.

Many visitors to the Takhini Hot Springs park their vehicles in the gravel parking lot on-site. There is a small risk of vehicles leaking fuel, hydraulic fluids, coolants, lubricants, etc. while parked. The Proponent notes that the "gravel parking lot and roadway run-off will travel through 'sand filter' prior to entering pond so as to allow filtration and bacteriological action to remove most pollutants. Affected gravel in the parking lot can be removed and remediated in a small hydrocarbon remediation field (plastic liner covered by sand, enclosed in small fenced area in maintenance yard)."

If the Proponent plans to establish a hydrocarbon remediation field on-site, they must apply for a permit to establish and operate a land treatment facility under the Yukon *Contaminated Sites Regulations* from the Government of Yukon. More information is available at: http://www.env.gov.yk.ca/air-water-waste/contaminated_sites_regs.php. Alternatively, if there is a limited amount of contaminated material, it may be taken to a permitted disposal site, as is indicated in the Proponent's Emergency/Spill Response Plan. If necessary, the Proponent is encouraged to contact the Government of Yukon Department of Environment (Environmental Programs Branch) to discuss the matter further.

5.3.1.2 Chlorine

The Proponent is operating a facility regulated and licenced under the Yukon *Public Health Act* and *Public Pool Regulations*, and as such utilizes chlorine for disinfectant. The Project also involves the use of muriatic (hydrochloric) acid once per year, as well as bleach and detergents every three days to clean the pool. The Canadian Water Quality Guidelines for the Protection of Aquatic Life indicate the guideline for reactive chlorine species in freshwater is 0.5 µg/L.[22] However, the guidelines note, the lowest reliable limit of detection reported is 10 µ/L, and therefore any detection of reactive chlorine species in aquatic

[21] YOR 2016-0064-024-1
[22] CCME 1999

systems is indicative of negative effects to aquatic life. The document notes the four main sources of reactive chlorine to the environment are treated wastewater effluents, chlorinated cooling water effluents, spills due to breaks in the drinking water distribution system, and uncollected releases of drinking water. Testing for pH will give an indication of any excess amounts of hydrochloric acid.

The Proponent's legislated water quality requirements include maintaining particular levels of chlorine and pH, regular testing for chlorine, pH, and bacteria, and maintaining daily operating records showing, for example, quantities and dates of all chemicals used and the results of testing. In addition to other locations, testing must occur at the water output at the last point of control, where it enters the environment, every four hours while the pool is open. For the current operation, this location is at the outflow of pond 1. With the proposed changes to the facility, the last point of control will be the discharge of pond 2, which captures water from pond 1 and from the series of pools in valley 2. The Proponent indicates current readings detect no chlorine at the discharge point for the existing system. The Proponent also indicates the proposed new facility will require a significant reduction in chlorine (up to 80 percent, depending on requirements from the Government of Yukon Environmental Health Branch) due to the new design, which includes multiple smaller pools, several of which will be chlorine-free. The Designated Office considers the proposed project to result in a lower magnitude and likelihood of effects from chlorine than exists with the existing facility.

Exposure to UV light causes chlorine to breakdown and dissipate; in this way, the uncovered pools and ponds act as treatment ponds. The Proponent indicates the current facility uses a larger amount of chlorine than the proposed facility will, and has treated water with one pond before releasing it to the downstream environment with no detectable residual chlorine. In addition, cattails (*Typha latifolia*) are known to be particularly effective in assisting the breakdown of human and animal derived wastewater, and removing disease-causing microorganisms and pollutants.[23] The Proponent will continue to line the ponds with cattails for this purpose.

The Proponent indicates that during the unlikely event of a full temporary closure of all the pools, chlorine will not be added to the water, and the pool bypass line will be employed to discharge water directly into valley 2, eliminating effects on water quality. For a permanent closure of the facility, pond 1 will be drained and be decommissioned.

During the public-comment period, a member of the public expressed concern regarding the effects of a failure of the dam on water downstream. The Project involves the use of an existing control structure in pond 1, which the Proponent proposes to reinforce. The Proponent also proposes to alter the channel at the outflow to reduce the likelihood of blockage, as blockage could cause the pond to overflow or could put excess strain on the dam. Prior to obtaining a water licence, an engineer must inspect the dam structure. Pond 2 provides for an emergency reservoir with 67 cm of freeboard, reducing the likelihood that untreated water will be released downstream.

5.3.2 Relevant Proponent Commitments

These identified commitments mitigate specific adverse effects of the Project and are instrumental in the Designated Office's significance determination. These commitments demonstrate the Proponent's efforts under s. 42(1) of YESAA to consider adverse project effects and mitigation measures. These specific

[23] Shutes 2001

commitments mitigate adverse effects and in some cases, may surpass the requirements of other legislation.

- An emergency/spill response plan was provided with the proposal, and will be followed during construction.
- Each piece of heavy equipment will be equipped with a spill kit.
- Minimal fossil fuels are stored on site (for emergency back-up generator use), chlorine is stored in an outdoor heated shed, as is muriatic acid and any other miscellaneous hazardous products.
- Pressure gauges of the glycol lines will be checked daily to ensure glycol leaks are detected.

5.3.3 Relevant Legislation

The Whitehorse Designated Office considered the following legislative requirements. The exclusion of other legislation listed here does not preclude compliance; rather, the Whitehorse Designated Office reviewed this specific legislation because of its direct relevance to the environment.

- *Fisheries Act*
- *Environment Act*
- *Spills Regulations*
- *Special Waste Regulations*
- *Contaminated Sites Regulations*
- *Waters Act*
- *Waters Regulations*

5.3.4 Significance Determination

The Project has the potential to adversely affect water quality on-site as well as downstream. The Hot Springs flow into the Takhini River and important aquatic and wetland habitat. Other land users depend on the quality of the water as they utilize it for irrigating their crops, for example. The new facility requires less chlorine and utilizes a more comprehensive approach to water treatment, which will reduce the likelihood of adverse effects. The Proponent will be required to regularly monitor water discharge and ensure acceptable water quality. The Proponent indicates testing at the discharge points from pond 1, the end of the small pools in valley 2, and the culvert in valley 3 will occur on a weekly basis. The data gathered during these inspections will be recorded at the same time. Given that the project design utilizes less chlorine, and provides for additional treatment capacity, than the current system, which did not report to have contaminated water discharge, the Designated Office is satisfied that the low likelihood and magnitude of chlorine entering the downstream environment will result in no significant adverse effects.

Spills and/or contamination from the use of equipment will be contained within the immediate site if properly managed with adequate equipment and immediate spill response. An insufficient spill response could result in the contamination of a much larger area, including downstream lands. However, with the

proponent commitments and current regulatory regime it is unlikely contamination will reach such an extent; thus, the geographic extent of effects is localized and limited.

As indicated in Section 5.2.4, the Designated Office encourages the Proponent to review Environment Yukon's Best Management Practices for Works Affecting Water in Yukon, available at: http://www.env.gov.yk.ca/publications-maps/documents/bestpractes_water.pdf.

The Designated Office considers the project design, the Proponent's commitments, and the regulatory regime to adequately reduce or control adverse effects to water quality such that they will not be significant. As such, the Whitehorse Designated Office has determined that the Project will not have significant adverse environmental effects to environmental quality from the deposit of deleterious substances. No further mitigation is required.

5.4 Residual Effects

Residual effects are those project effects that remain following the application of relevant legislation and the Proponent's commitments. Residual effects from the Project to water quality may include contamination from deleterious substances such as fuel from an accidental spill, a temporary increase in chlorine levels, or increased sedimentation. The Designated Office is satisfied that existing legislation and proponent commitments listed in this report are sufficient to ensure that residual effects from the Project on water quality are not significant and adverse.

5.5 Cumulative Effects

A cumulative effect occurs when a residual effect interacts with effects from other projects or activities to form an effect larger than the residual effect in isolation.

As discussed in Section 3.1, the unnamed creek flowing from the Proponent's property drains into the Hot Springs Creek, originating from the northwest, before emptying into the Takhini River. The spatial scope of the cumulative effects assessment includes the length of both streams (approximately 4.5 km) as well as the Takhini River from Old John's Slough to the Yukon River. The temporal scope is the life of the Project (50 years).

There are agricultural, recreational, and residential activities primarily occurring within the spatial scope of the Project that may have effects on the watercourses in the area from erosion and sedimentation and/or from accidents involving deleterious substances such as fuel. It is unlikely that other activities in the area will result in depositing chlorine to the water. The Designated Office notes that other activities in the area are also bound by the same legislative requirements regarding depositing substances into water (e.g., the *Waters Act*, *Fisheries Act*). As well, the agricultural activities in the area with water licences must abide by the terms and conditions in these licences.

As noted in Section 5.4, residual effects to water quality from the Project may include contamination from deleterious substances such as fuel from an accidental spill during construction, a temporary increase in chlorine levels, or increased sedimentation during construction or operations. The Designated Office anticipates the residual effects from the Project will be minimal. In fact, it is likely that during operations the proposed project will result in fewer residual effects, and/or residual effects of a smaller magnitude, than does the existing facility. As such, the Whitehorse Designated Office has determined that the Project will not have significant adverse cumulative environmental effects to water quality in connection with the effects of other activities. Therefore, no further mitigation is required.

6.0 CONCLUSION OF THE ASSESSMENT

Under s. 56(1)(a) of the *Yukon Environmental and Socio-economic Assessment Act*, the Whitehorse Designated Office recommends to the Decision Body for the Project that the Project be allowed to proceed, as it determined that the Project will not have significant adverse environmental or socio-economic effects in or outside Yukon.

Appendix A REFERENCES

All references to documents on the YESAB Online Registry (YOR) can be found by searching for the Project and document number on the YOR at http://www.yesab.ca/registry.

CCME. 1999. “Canadian Water Quality Guidelines for the Protection of Aquatic Life: Reactive Chlorine Species.” Canadian Council of Ministers of the Environment http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/ [Accessed 25 May 2016].

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