

December 4, 2009

EBA File: W23101159.023

Yukon Energy Corporation
2 Miles Canyon Road
Whitehorse, Yukon Y1A 6S7

Attention: David Morrison
President and CEO

Subject: Discovery of Artesian Aquifer 30 km North of Haines Junction during the Geothermal Exploration Drill Program

1.0 SUMMARY

An artesian aquifer was intersected during the geothermal exploration drill program at the edge of the Jarvis River Valley north of Haines Junction (Figures 1 and 2). The well is producing an estimated 40 gallons per minute. The flow is completely controlled by piping the flow to a large area of willows in the Jarvis River Valley about 200 m from the Jarvis River channel (Figure 3). Environmental personnel from EBA, YEC and the Lands office of the CAFN have inspected the site. Site operations meet the conditions of the land use permit and there are no immediate environmental concerns. Water analysis of the aquifer indicates that the chemical signature is essentially identical to the warm springs (Appendix A).

Intersecting an unpredictable artesian aquifer of this size in overburden is a critical and environmentally delicate issue that, for both budgetary and operational reasons, terminated the original objectives of the drill program. All resources were immediately focused to manage the water flow at the site and prepare a plan to seal the borehole. Stopping the flow of a highly pressured aquifer in overburden is beyond the expertise of the typical drilling contractor and an experienced grouting professional is required. An internationally recognized grouting professional consultant (ECO Grouting Specialists) was retained immediately to design a cementing program to seal the well using proven, environmentally benign methods. Various components are being fabricated this week in preparation for the grouting effort planned for December 7, 2009.

Costs to date and projected costs for the drilling and sealing of the aquifer are estimated to exceed the original Phase 023 budget by about \$35,000 (Table 1). Table 2 (appended) provides a summary of the schedule of events for the Jarvis River Drill Program.

2.0 INTRODUCTION

EBA Engineering Consultants Ltd. (EBA) is presently managing a Yukon geothermal exploration program for Yukon Energy Corporation (YEC). Part of this program has involved collecting surface water data and completing geophysical surveys in the vicinity of the Jarvis River warm springs. The investigation for geothermal potential at this site progressed to drilling two proposed boreholes to a depth of about 300 m to measure the geothermal gradient (the rate of temperature increase with depth) and to collect sub-surface bedrock information. There is no exposed bedrock within one kilometre of the study site and interpretation of the geophysics survey indicated a fault in bedrock at the area of interest.

Following an application through the YESAA process and receipt of a lands use permit from the Champagne Aishihik First Nations, drilling commenced on November 11, 2009. After drilling in overburden for 45 m an artesian aquifer was intersected on November 14, 2009. The likelihood of intersecting an artesian aquifer in a previously unexplored area is unpredictable and it is always possible in most any location.

An artesian aquifer is confined by an overlying low-permeability unit (aquitard or aquiclude) that causes the groundwater in the aquifer to be under pressure (Figure 1). Recharge to those aquifers usually occurs at higher elevation where the aquifer crops out, by downward leakage through the confining layer or by hydraulic connection to an underlying (bedrock) aquifer. Artesian aquifers may occur in both bedrock and overburden and are not limited to any specific depth range. Artesian aquifers often exist in valleys where recharge occurs at higher elevation at the slopes and where aquifers are overlain by confining, poorly permeable units. In about 2002, an artesian aquifer was intersected at a depth of about 360 m in the town of Haines Junction, over 30 kilometres away. Given the disparity in distance and depth, this occurrence of an artesian aquifer did not effect the decision to drill at the Jarvis River.

In the study area, the lower, artesian sand aquifer is confined by an overlying, poorly permeable glacial till. The potentiometric surface for a confined aquifer is the surface representative of the level to which water will rise in a well cased to the aquifer. The potentiometric surface of the aquifer encountered at Jarvis River is more than about 35 m above ground level, indicating a very significant in situ water pressure. Figure 4 below represents a generalized artesian aquifer model. The Jarvis River site would be represented by the flowing well.

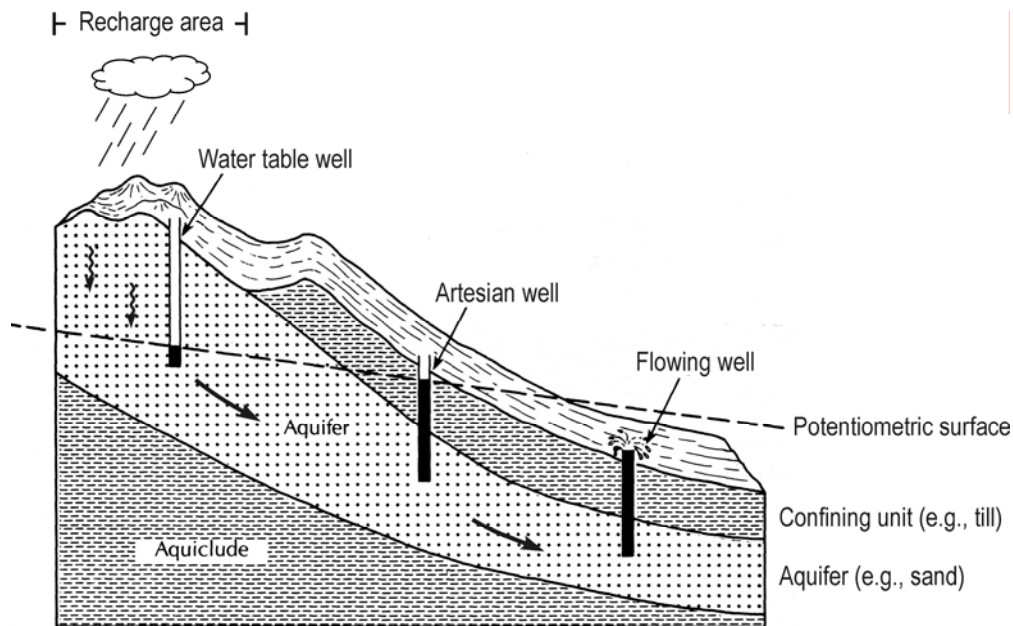


Figure 4 Artesian Aquifer Model

The estimated flow of the aquifer intersected at the Jarvis River site is about 40 gallons per minute. Intersecting an artesian aquifer such as this is not a welcome event to a drilling exploration program as the aquifer must be plugged to return the site to its natural state. Sealing an artesian aquifer is possible using a variety of methods depending on the site conditions. In this case the aquifer is within overburden. To seal an artesian aquifer in overburden requires specific expertise and EBA retained ECO Grouting Specialists, renowned as one of the best grouting specialists in North America, to ensure the best probability of success in the shortest time.

3.0 IMPACT TO BUDGET

Drilling is a costly advanced exploration technique but it also has the potential to provide the most valuable sub-surface information to assess the resource. Drilling costs are difficult to estimate – particularly in previously unexplored areas– because drilling time is dependant on a host of unpredictable characteristics, such as the texture and structure of sub-surface materials, groundwater issues and weather, each of which will impact both the financial and operational success of the program. The drill program at the Jarvis River warm springs was designed to achieve the objectives in a cost-effective manner assuming average sub-surface ground conditions. The interpreted model from the geophysics survey completed by Aurora Geoscience indicated a fault in bedrock at a relatively shallow depth.

Intersection of the shallow artesian aquifer at the Jarvis River Project site was unpredictable and has had a significant financial impact due to the following:

- To ensure the best probability of success in the shortest time, it was essential to retain a professional grouting consultant to design and implement a program to seal the well;
- The drill and crew provided by Kluane Drilling was on site longer than budgeted to accommodate the initial attempt to grout the borehole;
- Specialized equipment had to be fabricated to complete the grouting;
- A large volume of concrete and other additives are required to implement the grouting program;
- A second drilling contractor (Caron Diamond Drilling) had to be retained to drill a large diameter borehole that would accommodate a large diameter grout line and barrier bags; the drill rig provided by Kluane Drilling did not have the capacity to drill the large diameter casing;
- EBA's Project management time has increased substantially to support environmental management at the site; retain, manage and assist ECO Grouting Specialists; coordinate the increased activities of Kluane Drilling; manage and coordinate activities of Caron Diamond Drilling; correspondence with CAFN and other regulatory agencies; site inspections and assistance during the grouting; locating specialized equipment and materials both outside and within the Yukon; and to prepare information reports.

A number of steps have been taken to minimize costs:

- The Kluane Drill rig was demobilized from site as soon as possible; one helper was retained in Haines Junction to monitor the site, maintain pumps and water lines and keep the winter trail open;
- The Caron Diamond Drill will not be mobilized to the site until all components for the second grouting program are in place;
- EBA personnel project management time has been limited and a portion of our time has been carried by EBA or the individuals;
- The grouting consultant has not been retained while equipment and materials are acquired and set up for the second grouting program; ECO will return for a short time to implement the grouting program; and,
- The grouting consultant and program was initiated immediately to attempt to stop the flow as soon as possible.

Total estimated drilling costs and expenses to date, including the initial grouting attempt to seal the aquifer, are within the original budget for the Jarvis River drill project (Phase 023). Re-boring and completion of the final cementing of the borehole could cost an additional

\$90,000 (Table 1). The budget for the Jarvis River drill program of Phase 023 (Thermal Gradient Core Holes – Jarvis and McArthur) is \$184,000. The original budget that included a proposed borehole at McArthur was \$232, 600.

Table 1 Estimated Costs			
Drill Program-cost to date	\$80,000		
Equipment and materials for aquifer grouting	\$20,000		
ECO Grouting Consultants	\$24,000		
EBA fieldwork and project management	\$54,000		
Sub-total		\$178,000	
Projected costs for completion			
Drilling and support for grouting program	\$50,000		
Equipment and materials for aquifer grouting	\$10,000		
ECO Grouting Consultants	\$10,000		
EBA fieldwork and project management	\$15,000		
Spring site assessment and rehabilitation	\$5000		
Sub-total		\$90,000	
Total			\$268,000

4.0 CONCLUSIONS

- There are no concerns for significant environmental impact from this event; however, it is considered a priority to seal the well to return the site to it's natural state.
- Prompt actions were taken to swiftly manage the artesian flow and to protect the site; however, it has taken time to locate, transport and fabricate the specific equipment and materials required to ensure the well is properly and permanently sealed in an environmentally responsible manner;
- To ensure the best probability of success in the shortest time, it was essential to retain a professional grouting consultant to design and implement a program to seal the well.
- Once the aquifer is sealed there should be no permanent consequences from this event. EBA will monitor the site and will conduct a site inspection in the spring of 2010; if necessary a site rehabilitation program will be prepared and implemented to accelerate re-vegetation of any disturbed vegetation along the access road or drill site.
- Equipment and materials should be in place to seal the well on or about December 7, 2009.
- At this point, the total costs of the Jarvis River drill program are estimated to total about \$268,000. This exceeds the original overall Phase 023 budget by about \$35,000 (Table 1).

We trust that the foregoing information meets your present requirements. If you have any questions or require further information, please contact the undersigned.

EBA Engineering Consultants Ltd.

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Attachments:

Table 2: Jarvis River Drill Project Schedule
Figures 1 to 3: Location Map, Location Detail, Cross-Section
Appendix A : Water Chemistry



TABLES





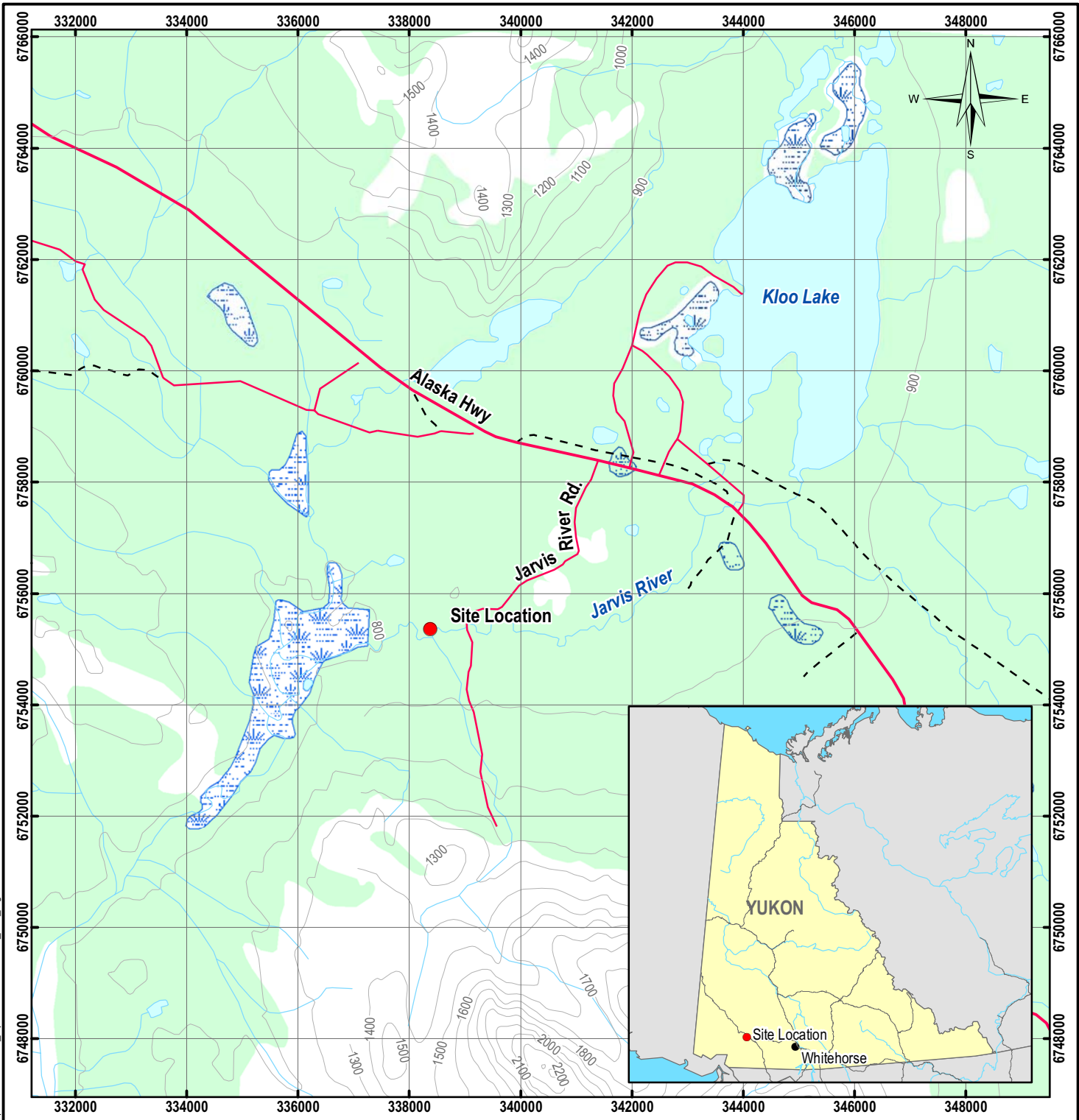
TABLE 2 JARVIS RIVER DRILL PROJECT SCHEDULE

DATE	DESCRIPTION
November 12	Commence drilling vertical hole
November 14	Intersect artesian aquifer at about 5:00 AM; sediment (mostly sand) carried by the aquifer is deposited on the ground at the drill. Water lines were immediately put in place to carry water from the borehole to a broad, flat willow field in the Jarvis River Valley; a sump was excavated to collect excess water and pumps were set up to direct water from the sump to the willow field.
November 15	2 pumps are not able to carry the total flow into the sump and there is some overflow; suspended sediment in the water is negligible.
November 16	ECO Grouting Specialists are retained to design and implement a plan to seal the aquifer; a site assessment indicates that the drill program is operating within permit conditions; water directed to the willow field is going to ground and there is no concern for impact to a natural water course.
November 17 to 20	Specialized equipment and materials are assembled and fabricated from local sources to seal the hole with concrete pumped into barrier bags placed at depth.
November 21	Cement is produced and pumped into barrier bags inserted into the borehole; some components of the equipment fail and this attempt fails to stop the flow; assessment of the operation finds that material available locally does not have the correct specifications to successfully seal the borehole.
November 22 to 30	Environmental and water management at the site is secure and maintained by a full time caretaker; the full volume of water produced from the well is siphoned and pumped to a benign area in a wide willow field in the river valley; EBA and ECO personnel design a new barrier system to secure the sealing of the aquifer; additional time is required to source and transport components with adequate specifications from outside the Yukon;
December 1 to 4	Components are being fabricated in Whitehorse for new barrier bags and a grout pumping system; Caron Diamond Drilling will mobilize to the site to re-bore the hole to prepare for the insertion of barrier bags and cement;
December 7	Re-boring to 15 cm diameter hole, placement of barrier bags and grouting operation to seal the borehole.



FIGURES





LEGEND

- Site Location
- Road
- - Limited Use Road
- - Trail
- Watercourse
- Waterbody
- Wetland
- Vegetation

NOTES

Base data source:
NTDB 1:250,000

YUKON-WIDE GEOTHERMAL EXPLORATION PROGRAM

2009 Jarvis River Drill Program Location Map

PROJECTION UTM Zone 8	DATUM NAD83
Scale: 1:100,000	

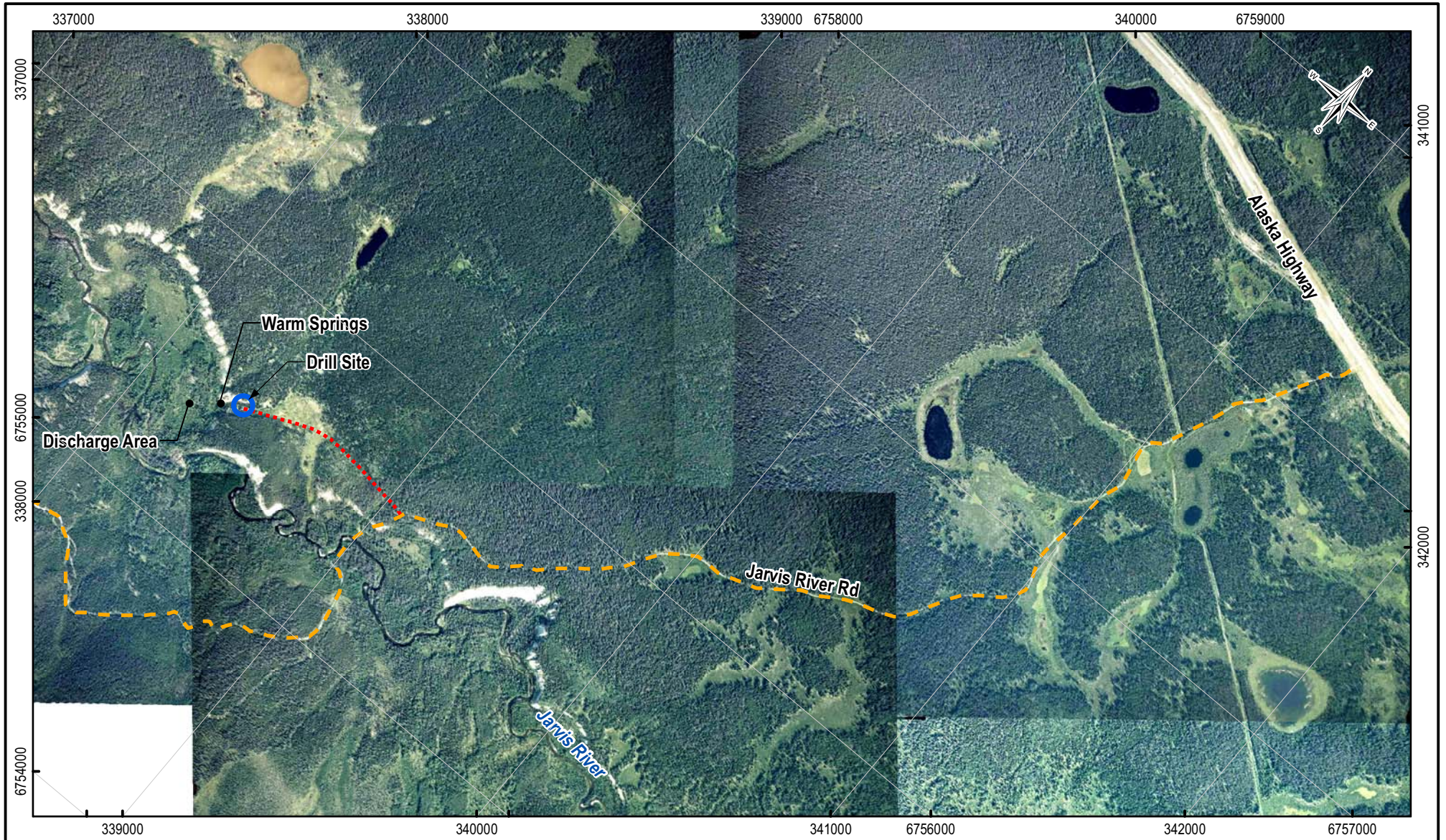


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PROJECT NO. W23101159.023	DWN MEZ	CKD JD	REV 0
OFFICE EBA-VANC	DATE April 8, 2010		

EBA Engineering Consultants Ltd.

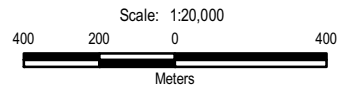
Figure 1

ISSUED FOR USE



LEGEND

- Jarvis River Road
- Winter Trail



PROJECTION: UTM Zone 8 DATUM: NAD83

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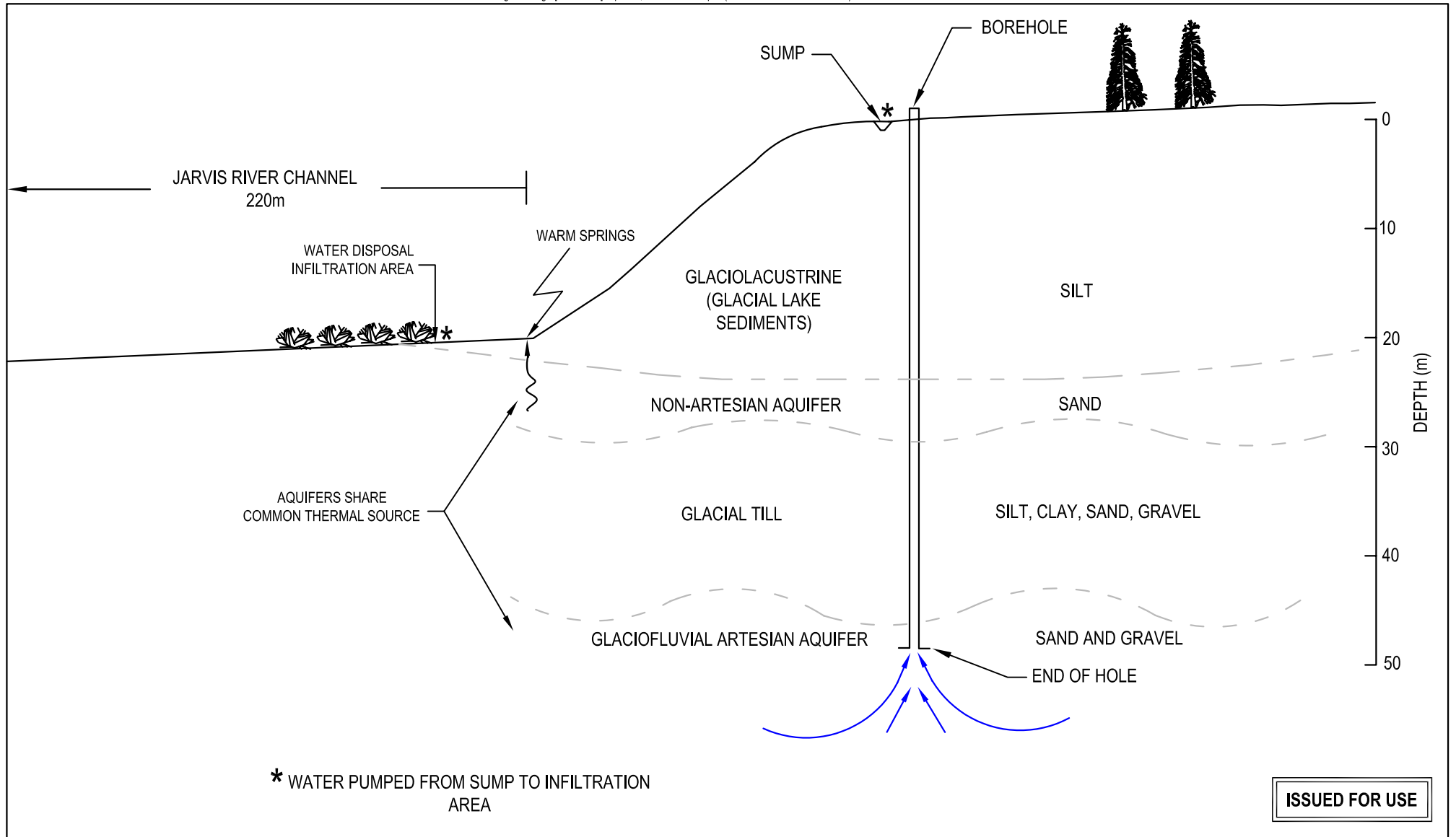
YUKON-WIDE GEOTHERMAL EXPLORATION PROGRAM




Jarvis River - 2009 Drill Program

PROJECT NO. W23101159.023	DWN MEZ	CKD JD	REV 0
OFFICE EBA-VANC	DATE April 8, 2010		

Figure 2

ISSUED FOR USE



<p>LEGEND</p> <p>→ Water Flow</p>	<p>CLIENT</p> 	<p>YUKON-WIDE GEOTHERMAL EXPLORATION PROGRAM</p>			
		<p>Jarvis River Borehole Cross-Section</p>			
<p>SCALE 1:500</p> 	<p>EBA Engineering Consultants Ltd.</p> 	PROJECT NO.	DWN	CKD	REV
		W23101159.023	MEZ	JD	0
		OFFICE	DATE		<p>Figure 3</p>
		VANC	April 8, 2010		



APPENDIX

APPENDIX A WATER CHEMISTRY



Appendix A JARVIS RIVER ARTESIAN AQUIFER CHEMISTRY

EBA collected two water samples from the flowing well on November 15 (Sample ID: JR-09-01-1) and 22 (Sample ID: JR-09-01-2). Sample JR-09-01-1 was taken from the water flowing along the outside of the well casing. The water carried a considerable amount of sediments when the sample was collected. Sample JR-09-01-2 was taken from the head of the well casing about one week after the first sample had been collected. The water carried significantly less sediments than during the first sampling but the water was still slightly turbid. The water from the flowing well is conveyed into a sump where most of the sediments settle out before the water is discharged to an area of willow flats in the Jarvis River Valley. Therefore, the dissolved metals analysis is more likely representative of the water that is being discharged from the sump.

Table A1 summarizes the chemistry results of the two samples collected from the flowing well and five samples taken from the Jarvis River Warm Springs in July 2009. The samples from the flowing well are chemically very similar to the water samples from the warm springs (Figure A1). All samples can be characterized as sodium-bicarbonate (Na-HCO₃) type water and both major ion and trace element concentrations are very similar, indicating that both waters originate from same source.

The dissolved arsenic, chromium, and lead concentrations (only sample JR-09-01-1) slightly exceed the CCME Protection of Aquatic Life water quality guideline values (cf. Table A1). The same exceedances, except for lead, were observed in some of the water samples from the warm springs. In spite of these slight exceedances of the CCME guideline, it is EBA's opinion that the temporary discharge of the water from the flowing well does not pose any risk to the environment for the following reasons:

- The exceedances are small and the same exceedances were observed in some of the water samples from the warm springs which naturally discharge into the same area;
- The water is not directly being discharged in any open surface water bodies;
- The water is being discharged into an area where it infiltrates back into ground; or,
- If the water ceases to infiltrate because the ground freezes, the discharged water will freeze and will either infiltrate next spring or will be part of the spring freshet, involving great dilution of the discharged water.

