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February 19, 2020

File: W2016E0004/W2016L8-0001

Mr. Ziaur Rahman
Manager, Surface Design and Construction
Department of Infrastructure
Government of the Northwest Territories
P.O. Box 1320
Yellowknife, NT X1A 2L9

Dear Mr. Rahman,

Information Request – Tlicho All-Season Road Project – Quarry Operations

On January 27, 2020, GNWT-INF submitted Version 2.0 of the Quarry Operations Plan (QOP) with supporting geochemical and archaeological data for borrow prospects 2B, 3, and 21B. On February 5, 2020, GNWT-INF submitted Version 3.0 of the QOP with supporting geochemical and archaeological data for borrow prospects 2B, 3, 21B, as well as 48.^{1,2} It is understood by Board staff that Pit 48 is expected to be developed soon.

A summary of the borrow/quarry prospects is provided by GNWT-INF in the 'Quarry Summary Table' of Appendix B of the QOP (also attached). This summary includes the approximate location, amount, type of materials required from each source; indications of whether Archaeological Impact Assessments and geochemical analyses were completed, including a determination on whether the proposed source has potential for Acid Rock Drainage (ARD) or Metal Leaching (ML); and distances to the nearest watercourse. Supporting geochemical data is included in Appendices D and E. In Version 3.0 of the QOP geochemical data and geophysical assessments were included for Pits 2B, 3, 21B, and 48 in Appendix E through technical memos provided by Tetra Tech.

¹ See WLWB Online Registry for [W2016E0004 – TASR – Quarry Operations Plan – Version 2.0 – Jan 27 20](#)

² See WLWB Online Registry for [W2016E0004 – TASR – Quarry Operations Plan – Version 3.0 – Feb 5 20](#)

To better understand the current state of GNWT-INF's quarry operations, the GNWT-INF is requested to submit the following:

1. An updated 'Quarry Summary Table' that clarifies:
 - a. The status of development for each source (i.e., which sources have already been developed (partially/fully), are actively being used, and are planned to be used for the remainder of Construction). Please also identify sources that GNWT-INF no longer plans to use (if any).
 - b. The 'Quarry Summary Table' identifies that Prospects 1000, 32B, 1001, and 109 still require geochemical verification (i.e., as per the column 'Geochemical Analysis Completed', these pits still require data). The approved QOP (Version 1.1) states on page 2-18 that material that has been "cleared through a geochemical verification process will be utilized for the road surface to avoid moderate to high ARD or ML." It is not clear as to whether or not these Pits have been used already or are planned to be used in the future, and whether the required geochemical verification has, or will be, undertaken.
 - c. No geochemical data is available yet for Pit 68A. Board staff note that the 'Quarry Summary Table' also states that data is already included for Pit 68A, even though Section 2.15 of the QOP states that this information will be provided at a later date. Please confirm and update the 'Quarry Summary Table' to reflect whether geochemical analysis and verification is already available or will be required and expected in the future.
 - d. Board staff note that Tetra Tech's technical memo for Pit 48 states that GNWT-INF plans to only use 'surficial material' but the 'Quarry Summary Table' indicates that both granular and bedrock material will be used. Please confirm whether granular and/or bedrock material will be used for the development of Pit 48 and whether the surficial materials are composed of colluvium or till.
 - e. Board staff note that in the 'Quarry Summary Table', there are only 16 values in the column 'Distance to Nearest Watercourse' for 21 sources included in the Table. Please identify and include the distances to the nearest waterbody/watercourse for each source.
2. Confirmation of whether there are plans, and whether there is potential, to further develop Pit 2B, Pit 3, and Pit 21B.
3. For Pits 48 and 105:
 - a. Updated quarry maps to include locations of test pit/boreholes;
 - b. Descriptions on the locations, methodology, and other details that demonstrate how representative samples were generated from test pits and boreholes (e.g., compositing, homogenizing, etc.); and
 - c. Description of what threshold values were used for identifying low, moderate and high metal leaching potential
4. In the QOP, GNWT states that for new sources, "additional testing typically includes tests after every 100,000 m³ of material withdrawn from each source." All verification sampling data to date, and a proposed method for the provision of this data to the Board moving forward.
5. Description of any post-construction/development monitoring, confirmatory sampling, or geological inspections by GNWT-INF to assess any changes in geological or geochemical characteristics of the road or quarry pits.

6. The QOP indicates that a site-specific Quarry Operations Plan will be submitted for each quarry, to document risks associated with drainage and leaching. Please confirm if this reference was intended to refer to the Quarry Development Plan required by the GNWT-Lands, and if not, when these site-specific plans would be expected.

Please submit this information for the Board's consideration as soon as possible.

If you have any questions or concerns regarding the Information Request, please feel free to contact Ryan Fequet at rfequet@wlb.com or 867-765-4589.

Sincerely,

A handwritten signature in blue ink, appearing to be 'Ryan Fequet', with a stylized, cursive script.

Ryan Fequet
Executive Director, Wek'èezhii Land and Water Board

Copied to: Wek'èezhii West Distribution List

Attachments: Quarry Summary Table, Appendix B, Version 3.0 of the QOP

Quarry Summary Table

Area	Source No.	Prospect	Approximate Station Based on Reference Concept Alignment (km)	Approximate Station Based on NSI Alignment (km)	Aggregate Type		Camp Location	Area Requested		Estimated Granular Qty (m ³)	Estimated Rock Qty (m ³)	Estimated Area to Clear (m ²)	Top Soil Volume (m ³)	Geochemical Analysis Completed	Potential for Acid Rock Drainage	Potential for Metal Leaching	Archaeological Impact Assessment Completed	Distance to Nearest Watercourse (m) Refer to Note 1.							
					Granular	Bedrock		(m ²)	(ha)																
Territorial	1	Prospect 1000	0.0	0.0	X		Camp 1	23,500	2.4	23,746	-	15,000	2,250	required; to be completed prior to material use			Required	1,100							
	2	Prospect 1	2.0	1.2	X	X		460,600	46.1	67,038	12,764	54,311	8,147	data available; see attached appendix D1 and D2	No	Low	Yes	40							
	3	Prospect 2B	5.4	4.5		X		189,000	18.9	-	86,674	35,036	5,255	data available; see attached appendix D and E	No	Low	Yes	840							
	4	Prospect 3	8.1	6.6	X			430,000	43.0	97,953	-	87,195	13,079	data available; see attached appendix D and E	No	Low	Yes	700							
	5	Prospect 13B	19.0	16.8	X	X		639,600	64.0	181,448	2,553	123,763	18,564	data available; see attached appendix D1 and D2	No	Low	Yes	675							
	6	Prospect 13C	19.5	19.5	X	X		1,375,000	137.5	429,213	6,382	264,932	39,740	data available; see attached appendix D1 and D2	No	Low	Yes	695							
	7	Prospect 13D	19.8	18.5		X		236,600	23.7	-	22,678	13,199	1,980	data available; see attached appendix D1 and D2	No	Low	Yes	10							
	8	Prospect 21B	24.9	24.2	X	X		453,000	45.3	162,120	12,764	244,241	36,636	data available; see attached appendix D and E	No	Low	Yes	120							
	9	Prospect 29	32.7	31.0	X			777,000	77.7	23,746	-	116,550	17,483	data available; see attached appendix D1 and D2	No	Low	Yes	1,100							
	10	Prospect 32B	35.9	35.2	X	X		925,000	92.5	114,874	104,780	178,588	26,788	required; to be completed prior to material use			Required	430							
	11	Prospect 33A	37.4	36.7	X	X	Camp 2	2,792,000	279.2	369,253	7,658	576,492	86,474	data available; see attached appendix D1 and D2	No	Low	Yes	680							
	12	Prospect 48	52.8	53.2	X	X	Camp 2a	1,560,000	156.0	255,858	2,553	423,700	63,555	data available; see attached appendix D and E	No	Low	Yes	20							
	13	Prospect 1001	59.8	59.4	X	X		1,607,000	160.7	17,810	48,680	22,529	3,379	required; to be completed prior to material use			Required	225							
	14	Prospect 68A	63.0	64.0	X	X		252,000	25.2	62,120	6,382	59,845	8,977	data available; see attached appendix D and E			Yes	65							
	15	Prospect 69	63.5	64.3	X		Camp 3	196,700	19.7	29,683	-	15,000	2,250	data available; see attached appendix D1 and D2	No	Low	Yes	893							
	16	Prospect 76	68.0	69.0	X	X		435,000	43.5	93,797	2,553	71,132	10,670	data available; see attached appendix D1 and D2	No	Low	Yes	170							
TUCHO	17	Prospect 86	75.2	76.3		X	Camp 3a	196,500	19.7	-	17,810	15,000	2,250	data available; see attached appendix D1 and D2	No	Low	Yes								
	18	Prospect 98	82.0	83.0	X			616,400	61.6	246,960	-	194,930	29,239	data available; see attached appendix D1 and D2	No	Low	Yes								
	19	Prospect 105	86.7	89.0		X		782,100	78.2	-	17,810	11,821	1,773	data available; see attached appendix D1 and	No	Low	Yes								
	20	Prospect 109	89.7	92.7	X	X	Camp 3b	472,000	47.2	98,309	20,422	88,919	13,338	required; to be completed prior to material use	No	Low	Yes								
		Prospect 116	97.4	96.0	X	X		477,550	47.8	137,887	19,145	97,934	14,690	data available; see attached appendix D1 and D2			Required								
TOTALS								14,896,550	1,489.7	2,411,817	391,605	2,710,115	406,517												
Notes:								1. Applicable setback distances will be respected where quarry boundaries overlap or are close to watercourses. Limits of quarry operations will be flagged in the field.																	